

Clouds and the Earth's Radiation Energy System (CERES) CCES8_AB Collection Document

CERES logo goes here

Summary

The Clouds and the Earth's Radiant Energy System (CERES) is a key component of the Earth Observing System (EOS). The CERES instruments are improved models of the Earth Radiation Budget Experiment (ERBE) scanner instruments, which operated from 1984 through 1990 on the National Aeronautics and Space Administration's (NASA) Earth Radiation Budget Satellite (ERBS) and on the National Oceanic and Atmospheric Administration's (NOAA) operational weather satellites NOAA-9 and NOAA-10. The strategy of flying instruments on Sun-synchronous, polar orbiting satellites, such as NOAA-9 and NOAA-10, simultaneously with instruments on satellites that have precessing orbits in lower inclinations, such as ERBS, was successfully developed in ERBE to reduce time sampling errors. CERES will continue that strategy by flying instruments on the polar orbiting EOS platforms simultaneously with an instrument on the Tropical Rainfall Measuring Mission (TRMM) spacecraft, which will have an orbital inclination of 35 degrees. In addition, to reduce the uncertainty in data interpretation and to improve the consistency between the cloud parameters and the radiation fields, CERES will include cloud imager data and other atmospheric parameters. The first CERES instrument is scheduled to be launched on the TRMM spacecraft in 1997. Additional CERES instruments will fly on the EOS-AM platforms, the first of which is scheduled for launch in 1998, and on the EOS-PM platforms, the first of which is scheduled for launch in 2000. The TRMM satellite carries one CERES instrument while the EOS satellites carry two CERES instruments, one operating in a fixed azimuth scanning mode for continuous Earth sampling and the other operating in a rotating azimuth scanning mode (RAPS) for improved Angular Directional Models.

To preserve historical continuity, some parts of the CERES data reduction will use algorithms identical with the algorithms used in ERBE. At the same time, many of the algorithms on CERES are new. The CERES investigation is designed to monitor the top-of-atmosphere radiation budget as defined by ERBE, define the physical properties of clouds, define the surface radiation budget, and determine the divergence of energy throughout the atmosphere. The CERES Data Management System produces products which will support research to increase understanding of the Earth's climate and radiant environment.

[Product Specific Information]

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1.0 Collection Overview

1.1 Collection Identification

The ES8 filename is,

CER_ ES8_Sampling-Strategy_Production-Strategy_XXXXXX.YYYYMM[DD][HH]

where

Sampling-Strategy defines the platform (e.g., TRMM-PFM)
Production-Strategy defines the edition or campaign (e.g., At-launch-Edition)
XXXXXX is the configuration code used for file and software versioning management
YYYY is a 4-digit year integer
MM is a 2-digit month integer
DD is a 2-digit day integer [Modify as needed for monthly products] and
HH is a 2-digit hour integer [Modify as needed for daily and monthly products.]

1.2 Collection Introduction

[Product Specific Information]

1.3 Objective/Purpose

The science objectives of the CERES investigation are

1. For climate change analysis, provide a continuation of the ERBE (Earth Radiation Budget Experiment) record of radiative fluxes at the top of the atmosphere (TOA) analyzed using the same techniques as the existing ERBE data.
2. Double the accuracy of estimates of radiative fluxes at the TOA and the Earth's surface.

3. Provide the first long-term global estimates of the radiative fluxes within the Earth's atmosphere.
4. Provide cloud property estimates which are consistent with the radiative fluxes from surface to TOA.

A high-level view of the CERES Data Management System (DMS) is illustrated by the CERES Top Level Data Flow Diagram shown in [Figure 1-1](#). Circles in the diagram represent algorithm processes which are called subsystems. Subsystems are a logical collection of algorithms which together convert input products into output products. Boxes represent archival products. Two parallel lines represent data stores which are designated as nonarchival or temporary data products. Boxes or data stores with arrows entering a circle are input sources for the subsystem, while boxes or data stores with arrows exiting the circles are output products.

[Product Specific Information]

1.4 Summary of Parameters

[Product Specific Information]

1.5 Discussion

[Product Specific Information]

1.6 Related Collections

The CERES DMS produces science data products or collections for use by the CERES Science Team, the Data Management Team, and for archival at the Langley Distributed Active Archive Center (DAAC). For a complete list of products, see the CERES Data Products Catalog ([Reference 1](#)).

1.7 Included Collections

[Product Specific Information]

2.0 Investigators

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Shade subsystem circle and output product

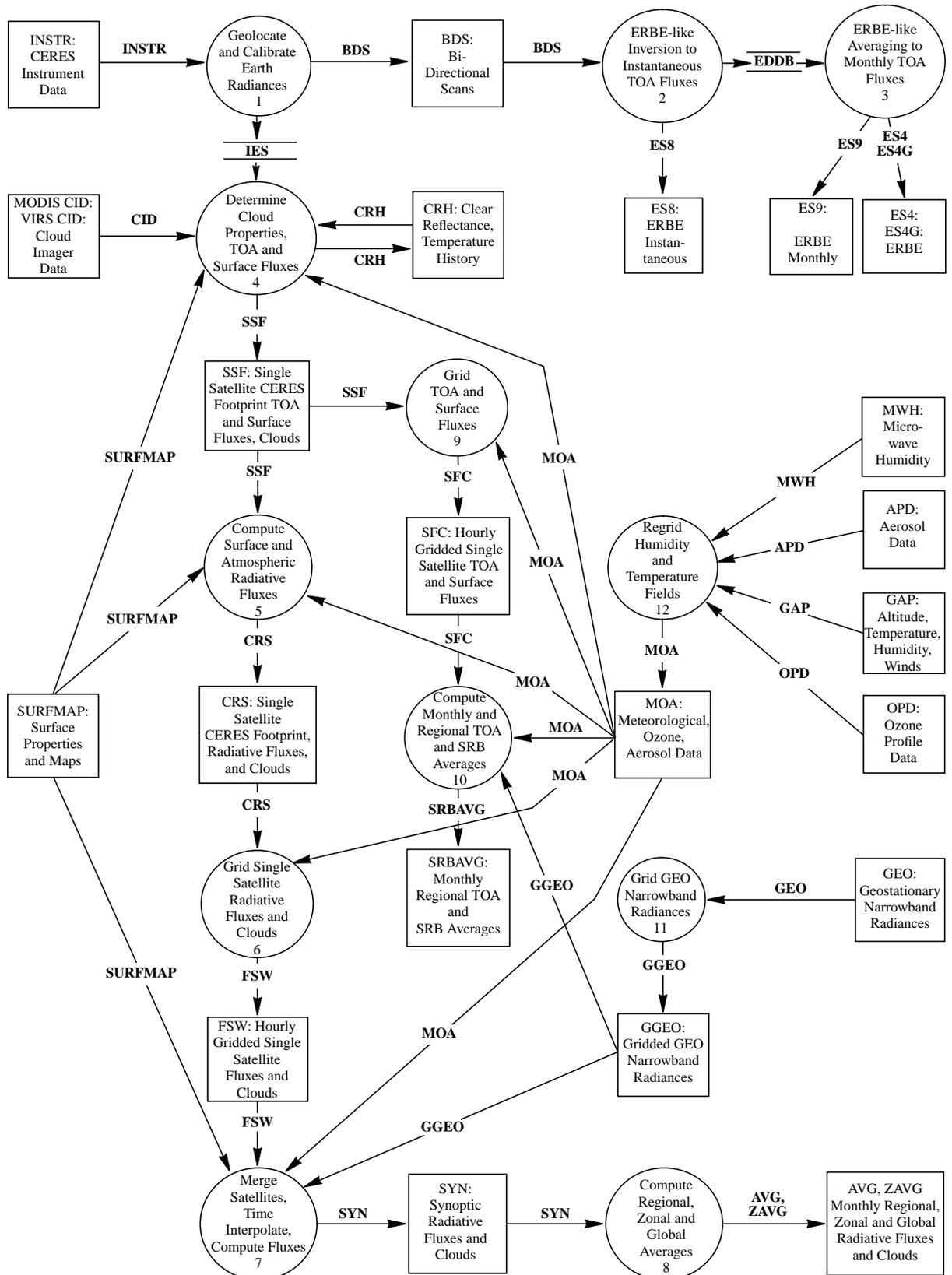


Figure 1-1. CERES Top Level Data Flow Diagram

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2.1 Title of Investigation

Clouds and the Earth's Radiant Energy System (CERES).

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3.0 Origination

The CERES data originate from CERES instruments on-board either the TRMM or the EOS Earth-orbiting spacecraft. [Table 3-1](#) lists the CERES instruments along with their host satellites.

Table 3-1. CERES Instruments

Satellite	CERES Instrument	
TRMM	Prototype Flight Model (PFM)	
EOS-AM1	Flight Model 1 (FM1)	Flight Model 2 (FM2)
EOS-PM1	Flight Model 3 (FM3)	Flight Model 4 (FM4)

3.1 Sensor and Instrument Description

The CERES instrument package contains three scanning thermistor bolometer radiometers classified by their broad-band spectral regions: total, window, and shortwave. The detectors

measure the radiation in the near-visible through far-infrared spectral region. The shortwave detector measures Earth-reflected solar radiation in the wavelength region of 0.3 to 5.0 microns; the window detector measures Earth-emitted longwave radiation in the water vapor window wavelength region of 8.0 to 12.0 microns; and the total detector measures radiation in the range of 0.3 to 100 microns. The detectors are coaligned and mounted on a spindle that rotates about the instrument elevation axis. The field of view footprints of the CERES detectors are approximately 10- and 20-km at nadir for the instruments on the TRMM and EOS spacecraft, respectively.

The CERES instrument has an operational scanning cycle of 6.6 seconds and various scan elevation profiles. Radiometric measurements are sampled from the detectors every 0.01 seconds in all scanning profiles. The instrument makes Earth science measurements while the detectors rotate in the vertical (elevation scan) and horizontal (azimuth rotation). The instrument has built-in calibration sources for performing in-flight calibrations, and can also be calibrated by measuring solar radiances reflected by a solar diffuser plate into the instrument field of view. See the CERES Algorithm Theoretical Basis Document (ATBD) for Subsystem 1.0 ([Reference 2](#)). Also, see the instrument, the sensor, and the platform Guides (TBD).

4.0 Data Description

4.1 Spatial Characteristics

4.1.1 Spatial Coverage

The CERES collection is a global data set whose spatial coverage depends on the satellite orbit as shown in [Table 4-1](#). [*Product Specific Information*].

Table 4-1. CERES Spatial Coverage

Spacecraft	Minimum Latitude (deg)	Maximum Latitude (deg)	Minimum Longitude (deg)	Maximum Longitude (deg)	Spacecraft Altitude (km)
TRMM	-52.00	52.00	-180.00	180.00	350
EOS-AM1	-90.00	90.00	-180.00	180.00	705
EOS-PM1	-90.00	90.00	-180.00	180.00	705

4.1.2 Spatial Coverage Map

[*Product Specific Information - use postage stamp size images that links to full-sized images - recommendation from DAAC*]

4.1.3 Spatial Resolution

[Product Specific Information]

4.1.4 Projection

[Applies to gridded data. Delete section from instantaneous products.]

4.1.5 Grid Description

[Applies to gridded data. Delete section from instantaneous products.]

4.2 Temporal Characteristics

4.2.1 Temporal Coverage

CERES temporal coverage begins at different times depending upon when the spacecraft is launched, when the scan covers are opened after launch, and when early in-orbit calibration check-out is completed (See [Table 4-2](#)). Archival science products will be produced for the next complete month of data. *[Product Specific Information]*

Table 4-2. CERES Temporal Coverage

Spacecraft	Launch Date	Start Date	End Date
TRMM	11/19/1997	1/1/98	to present
EOS-AM: FM1 & FM2	06/30/1998	9/1/98	to present
EOS-PM: FM3 & FM4	12/30/2000	3/1/2001	to present

4.2.2 Temporal Resolution

[Product Specific Information]

4.3 Data Characteristics

[Product Specific Information]

4.3.1 Parameter/Variable

4.3.1.1 ES-8 Metadata

The types of ES-8 data are summarized in [Table 4.3-1](#). The metadata structures contain information which need only be recorded once per daily product. The CERES metadata are listed in Appendix B. Table B-1 lists the CERES Baseline Header Metadata and Table B-2 list the parameters in the Vdata Metadata Table. Note that the Vdata Metadata is a subset of the CERES Baseline Header Metadata. As explained in Appendix B, the CERES Baseline Header Metadata includes either the bounding rectangle or GRing attributes. The spatial boundaries of the ES-8 is defined with the bounding rectangle. The ES-8 also contains Product Specific Metadata, which are shown in [Table 4.3-2](#).

Table 4.3-1. ES-8 HDF-EOS Summary

HDF Name	Description Table	Records	Number of Fields	Nominal Size (MBytes)
CERES Baseline Header Metadata	Table B-1	1	35	
CERES_metadata Vdata	Table B-2	1	14	
ES-8 Product Specific Metadata	Table 0.1-2	1	1	0
ES-8 SDS Summary	Table 4.3-1	1	20	467.1
ES-8 Vdata Summary	Table 0.1-4	1	20	1.1
ES-8 TOTAL SIZE (MB/Day)				468.2

Table 4.3-2. ES-8 Product Specific Metadata

Item	Parameter Name	Records	Units	Range	Data Type
1	ES8ProductionDate	1	N/A	N/A	ASCII string

4.3.1.2 ES-8 Vdata Structures

The ES-8 data product contains 20 Vdata structures. Each of these structures contains multiple occurrences or records of a single parameter that corresponds to the maximum number of scans in a day (13, 091).

Table 4.3-1. ES-8 Vdata Summary

Parameter Name	Parameter Number	Units	Range	VData Size	Bits per Element	Vdata Size (MB)
Time of Observation	1	day	2449353 .. 999999999	13091 x 1	64	.10
Earth-Sun distance at record start	4	AU	98×10^6 .. 102×10^6	13091 x 1	64	.10
X component of satellite position at record start	5	m	-8×10^6 .. 8×10^6	13091 x 1	32	.05
X component of satellite position at record end	6	m	-8×10^6 .. 8×10^6	13091 x 1	32	.05
Y component of satellite position at record start	7	m	-8×10^6 .. 8×10^6	13091 x 1	32	.05
Y component of satellite position at record end	8	m	-8×10^6 .. 8×10^6	13091 x 1	32	.05
Z component of satellite position at record start	9	m	-8×10^6 .. 8×10^6	13091 x 1	32	.05
Z component of satellite position at record end	10	m	-8×10^6 .. 8×10^6	13091 x 1	32	.05
X component of satellite velocity at record start	11	m/sec	-1×10^4 .. 1×10^4	13091 x 1	32	.05
X component of satellite velocity at record end	12	m/sec	-1×10^4 .. 1×10^4	13091 x 1	32	.05
Y component of satellite velocity at record start	13	m/sec	-1×10^4 .. 1×10^4	13091 x 1	32	.05
Y component of satellite velocity at record end	14	m/sec	-1×10^4 .. 1×10^4	13091 x 1	32	.05
Z component of satellite velocity at record start	15	m/sec	-1×10^4 .. 1×10^4	13091 x 1	32	.05
Z component of satellite velocity at record end	16	m/sec	-1×10^4 .. 1×10^4	13091 x 1	32	.05
Colatitude of satellite nadir at record start	17	deg	0 .. 180	13091 x 1	32	.05
Colatitude of satellite nadir at record end	18	deg	0 .. 180	13091 x 1	32	.05
Longitude of satellite nadir at record start	19	deg	0 .. 360	13091 x 1	32	.05
Longitude of satellite nadir at record end	20	deg	0 .. 360	13091 x 1	32	.05
Colatitude of Sun at observation	21	deg	0 .. 180	13091 x 1	32	.05
Longitude of Sun at observation	22	deg	0 .. 360	13091 x 1	32	.05
Total Vdata Size (MB)						1.10

4.3.1.3 ES-8 Scientific Data Sets

The ES-8 contains 20 SDSs which are 2-dimensional arrays of time ordered records where the first dimension corresponds to the maximum number of scans in a 24-hour product (13,091). For measurement level data, the second dimension corresponds to the maximum number of footprints in each scan (660). For the flag words, the second dimension corresponds to the number of flag words recorded for each scan record (22) or to the single radiance flag word per channel for each scan record (3). [Table 4.3-1](#) summarizes the contents and sizes of each SDS contained within the ES-8 file.

Table 4.3-1. ES-8 SDS Summary

Parameter Name	Parameter Number	Units	Range	SDS Size	Bits per Element	SDS Size (MB)
Colatitude of CERES FOV at TOA	2	deg	0 .. 180	13091 x 660	32	32.96
Longitude of CERES FOV at TOA	3	deg	0 .. 360	13091 x 660	32	32.96

Table 4.3-1. ES-8 SDS Summary

Parameter Name	Parameter Number	Units	Range	SDS Size	Bits per Element	SDS Size (MB)
CERES TOT filtered radiance	23	W/(m ² sr)	0 .. 700	13091 x 660	32	32.96
CERES SW filtered radiance	24	W/(m ² sr)	-10 .. 510	13091 x 660	32	32.96
CERES WN filtered radiance	25	W/(m ² sr)	0 .. 50	13091 x 660	32	32.96
CERES viewing zenith at TOA	26	deg	0 .. 90	13091 x 660	32	32.96
CERES solar zenith at TOA	27	deg	0 .. 180	13091 x 660	32	32.96
CERES relative azimuth at TOA	28	deg	0 .. 360	13091 x 660	32	32.96
CERES SW unfiltered radiance	29	W/(m ² sr)	-10 .. 510	13091 x 660	32	32.96
CERES LW unfiltered radiance	30	W/(m ² sr)	0 .. 200	13091 x 660	32	32.96
CERES WN unfiltered radiance	31	W/(m ² sr)	0 .. 50	13091 x 660	32	32.96
CERES SW flux at TOA	32	W/m ²	0 .. 1400	13091 x 660	32	32.96
CERES LW flux at TOA	33	W/m ²	50 .. 400	13091 x 660	32	32.96
ERBE scene identification at observation	34	N/A	0 .. 12.4	13091 x 660	32	32.96
Total channel flag words	35	N/A	N/A	13091 x 22	32	1.10
SW channel flag words	36	N/A	N/A	13091 x 22	32	1.10
WN channel flag words	37	N/A	N/A	13091 x 22	32	1.10
Scanner FOV flag words	38	N/A	N/A	13091 x 22	32	1.10
Rapid retrace flag words	39	N/A	N/A	13091 x 22	32	1.10
Scanner operations flag word	40	N/A	N/A	13091 x 3	32	0.15
Total SDS size						467.07

Maximum Meta Bits:
 Maximum Data Bits*: 3927300000
 Maximum Bits: 3927300000
 Maximum Product Size (MB)*: 468.2

* Note: Maximum sizes are based on 13,091 total 6.6-sec data records.

4.3.2 Variable Description/Definition

ES8-1 Time of Observation [2440000.500000000 - 2480000.400000000 days]

The Time of Observation is the whole part of the Julian Date (Julian Day) plus the fractional part of the Julian Date (Julian Time) at the beginning of each ES-8 record or at the time of observation for the first (of 660) measurement on the 6.6-second record.

The Julian Date is a reckoning of time that has been adopted by astronomers and used in many scientific experiments. This system counts the mean solar days consecutively that have elapsed since January 1 of the year 4713 B.C. A new Julian Day starts when the mean sun at noon crosses the Greenwich meridian. This differs from Universal Time (UT) or Greenwich Mean Solar Time by 12 hours since the UT day changes at Greenwich midnight. This is illustrated for Calendar Day, January 1, 1998 in the table.

Calendar Date		Julian Date
Day	Time (Hours)	(Days)
January 1, 1998	00	2450814.50
January 1, 1998	06	2450814.75
January 1, 1998	12	2450815.00
January 1, 1998	18	2450815.25
January 1, 1998	24	2450815.50
January 2, 1998	00	

The Time of Observation is a 64 bit floating point number (Example: 2450753.859432137 days).

In Subsystem 1, the toolkit call PGS_TD_Sctime_to_UTC converts Spacecraft time to UTC time. A second toolkit call, PGS_TD_UTC_to_UTCjd, converts the ASCII string into two double precision real numbers, the Julian Date at Greenwich midnight (x.5 in the table) and the fraction of the day since Greenwich midnight, which are added together to obtain the Time of Observation.

ES8-2 Colatitude of CERES FOV at TOA [0.0 to 180.0 degrees]

The Colatitude of the CERES FOV at the TOA in the Earth equator, Greenwich meridian coordinate system (see ES8-17) or the colatitude of the “target point” (see glossary). There are 660 values of this parameter; one for each measurement.

If any part of the FOV misses the Earth, the Colatitude of the CERES FOV at the TOA is set to default. Also, see the Scanner Field-of-View (FOV) Flags (ES8-38).

In Subsystem 1, the toolkit call `PGS_CSC_GetFOV_Pixel` returns the geodetic latitude and longitude of the intersection of the FOV centroid and the CERES_TOA Model (see TOA in glossary). Another toolkit call `PGS_CSC_GEOtoECR` transforms the geodetic latitude and longitude to the Earth-Centered Rotating (ECR) or Earth equator, Greenwich meridian rectangular coordinates from which the geocentric colatitude and longitude are calculated.

ES8-3 Longitude of CERES FOV at TOA [0.0 to 360.0 degrees]

The Longitude of the CERES FOV at the TOA (see ES8-2) in the Earth equator, Greenwich meridian coordinate system (see ES8-17) or the longitude of the “target point” (see glossary). There are 660 values of this parameter; one for each measurement.

If any part of the FOV misses the Earth, the Longitude of the CERES FOV at the TOA is set to default. Also, see the Scanner Field-of-View (FOV) Flags (ES8-38).

The longitude is determined from toolkit calls (see ES8-2).

ES8-4 Earth-Sun distance at hour start [0.98 to 1.02 AU]

The Earth-Sun distance is the distance from the Earth to the Sun in astronomical units (AU) during this ES-8 record at the Time of Observation (see ES8-1).

In Subsystem 1, the toolkit call `PGS_CBP_Earth_CB_Vector` computes the Earth-Centered Inertial frame vector to the Sun. The toolkit call `PGS_CSC_ECItO ECR` transforms the position vector to the Earth-Centered Rotating (ECR) or Earth equator, Greenwich meridian rectangular coordinate system. The magnitude of the position vector is then computed in astronomical units.

ES8-5 X component (Beginning of Record) of satellite radius vector [-8,000,000 to 8,000,000 meters]

The X component of the satellite position at the beginning of the 6.6-second record in the Earth equator, Greenwich meridian coordinate system (see ES8-17).

Since the spacecraft position and velocity are given at the beginning and end of the record, the end conditions from one record are the same as the beginning conditions of the next record.

In Subsystem 1, the toolkit call `PGS_EPH_Earth_EphemAttit` computes the satellite position vector in Earth-Centered Inertial coordinates. A second toolkit call, `PGS_CSC_ECItO ECR`, transforms the position vector to the Earth-Centered Rotating (ECR) or Earth equator, Greenwich meridian rectangular coordinate system (see ES8-17).

ES8-6 X component (End of Record) of satellite radius vector [-8,000,000 to 8,000,000 meters]

The X component of the satellite position at the end of the 6.6-second record (see ES8-5).

ES8-7 Y component (Beginning of Record) of satellite radius vector [-8,000,000 to 8,000,000 meters]

The Y component of the satellite position at the beginning of the 6.6-second record in the Earth equator, Greenwich meridian coordinate system (see ES8-17).

Since the spacecraft position and velocity are given at the beginning and end of the record, the end conditions from one record are the same as the beginning conditions of the next record.

The satellite position vector components are determined from toolkit calls (see ES8-5).

ES8-8 Y component (End of Record) of satellite radius vector [-8,000,000 to 8,000,000 meters]

The Y component of the satellite position at the end of the 6.6-second record (see ES8-7).

ES8-9 Z component (Beginning of Record) of satellite radius vector [-8,000,000 to 8,000,000 meters]

The Z component of the satellite position at the beginning of the 6.6-second record in the Earth equator, Greenwich meridian coordinate system (see ES8-17).

Since the spacecraft position and velocity are given at the beginning and end of the record, the end conditions from one record are the same as the beginning conditions of the next record.

The satellite position vector components are determined from toolkit calls (see ES8-5).

ES8-10 Z component (End of Record) of satellite radius vector [-8,000,000 to 8,000,000 meters]

The Z component of the satellite position at the end of the 6.6-second record (see ES8-9).

ES8-11 X component (Beginning of Record) of satellite inertial velocity [-10,000 to 10,000 m/sec]

The X component of the satellite inertial velocity at the beginning of the 6.6-second record in the Earth equator, Greenwich meridian coordinate system (see ES8-17).

Since the spacecraft position and velocity are given at the beginning and end of the record, the end conditions from one record are the same as the beginning conditions of the next record.

In Subsystem 1, the toolkit call PGS_EPH_Earth_EphemAttit computes the satellite velocity vector in Earth-Centered Inertial coordinates. A second toolkit call, PGS_CSC_ECIt to ECR, transforms the velocity vector to the Earth-Centered Rotating (ECR) or Earth equator, Greenwich meridian rectangular coordinate system (see ES8-17).

ES8-12 X component (End of Record) of satellite inertial velocity [-10,000 to 10,000 m/sec]

The X component of the satellite inertial velocity at the end of the 6.6-second record (see ES8-11).

ES8-13 Y component (Beginning of Record) of satellite inertial velocity [-10,000 to 10,000 m/sec]

The Y component of the satellite inertial velocity at the beginning of the 6.6-second record in the Earth equator, Greenwich meridian coordinate system (see ES8-17).

Since the spacecraft position and velocity are given at the beginning and end of the record, the end conditions from one record are the same as the beginning conditions of the next record.

The satellite inertial velocity components are determined from toolkit calls (see ES8-11).

ES8-14 Y component (End of Record) of satellite inertial velocity [-10,000 to 10,000 m/sec]

The Y component of the satellite inertial velocity at the end of the 6.6-second record (see ES8-13).

ES8-15 Z component (Beginning of Record) of satellite inertial velocity [-10,000 to 10,000 m/sec]

The Z component of the satellite inertial velocity at the beginning of the 6.6-second record in the Earth equator, Greenwich meridian coordinate system (see ES8-17).

Since the spacecraft position and velocity are given at the beginning and end of the record, the end conditions from one record are the same as the beginning conditions of the next record.

The satellite inertial velocity components are determined from toolkit calls (see ES8-11).

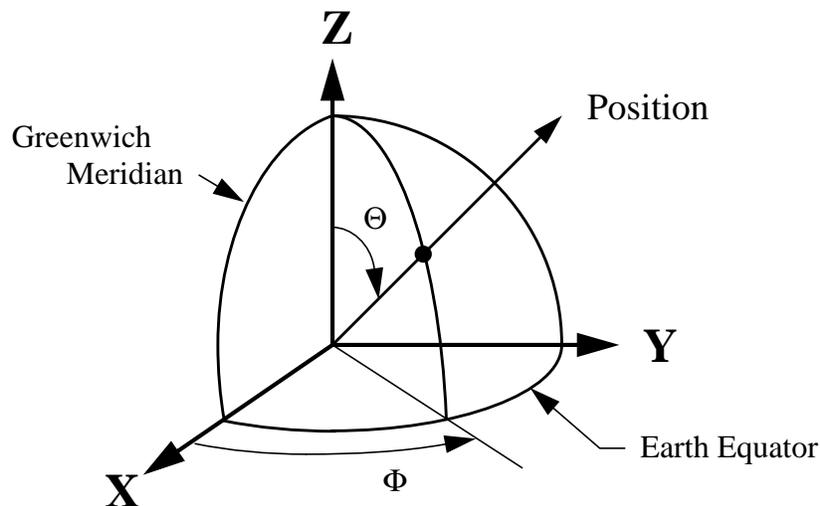
ES8-16 Z component (End of Record) of satellite inertial velocity [-10,000 to 10,000 m/sec]

The Z component of the satellite inertial velocity at the end of the 6.6-second record (see ES8-15).

ES8-17 Colatitude (Beginning of Record) of satellite nadir at observation [0.0 to 180.0 degrees]

The Colatitude of the satellite nadir at the Time of Observation (ES8-1) in the Earth equator, Greenwich meridian coordinate system.

The colatitude of the North Pole is 0 degrees and the colatitude of the South Pole is 180 degrees. The figure below denotes colatitude by Θ and longitude by Φ .



The Earth equator, Greenwich meridian system is an Earth-fixed, geocentric, rotating coordinate system with the x-axis in the equatorial plane through the Greenwich meridian, the y-axis lies in the equatorial plane 90° to the east of the x-axis, and the z-axis is toward the North Pole.

In Subsystem 1, the toolkit call PGS_EPH_Earth_EphemAttit computes the satellite position vector in Earth-Centered Inertial coordinates. A second toolkit call, PGS_CSC_ECIt to ECR, transforms the position vector to the Earth-Centered Rotating (ECR) or Earth equator, Greenwich

meridian rectangular coordinate system and from this, we calculate the geocentric colatitude and longitude.

ES8-18 Colatitude (End of Record) of satellite nadir at observation [0.0 to 180.0 degrees]

The Colatitude of the satellite nadir at the time of observation for the last (of 660) measurements on the 6.6-second record (see ES8-17).

ES8-19 Longitude (Beginning of Record) of satellite nadir at observation [0.0 to 360.0 degrees]

The Longitude of the satellite nadir at the Time of Observation (ES8-1) in the Earth equator, Greenwich meridian coordinate system (see ES8-17). The longitude is determined from toolkit calls (see ES8-17).

ES8-20 Longitude (End of Record) of satellite nadir at observation [0.0 to 360.0 degrees]

The Longitude of the satellite nadir at the time of observation for the last (of 660) measurements on the 6.6-second record (see ES8-19).

ES8-21 Colatitude of Sun at observation [0.0 to 180.0 degrees]

The Colatitude of the Sun at the Time of Observation (ES8-1) in the Earth equator, Greenwich meridian coordinate system (see ES8-17).

The toolkit call `PGS_CBP_Earth_CB_vector` computes the sun position vector in Earth-Centered Inertial coordinates. A second toolkit call, `PGS_CSC_ECIto ECR`, transforms the position vector to the Earth-Centered Rotating (ECR) or Earth equator, Greenwich meridian rectangular coordinate system and from this, we calculate the geocentric colatitude and longitude.

ES8-22 Longitude of Sun at observation [0.0 to 360.0 degrees]

The longitude of the Sun at the time of observation (ES8-1) in the Earth equator, Greenwich meridian coordinate system (see ES8-17). The longitude is determined from toolkit calls (see ES8-21).

ES8-23 CERES TOT filtered radiance, upwards [0 to 700 W m⁻² sr⁻¹]

The CERES TOT filtered radiance is the measured total radiance at satellite altitude and is interpreted as the outgoing TOT radiance at the TOA. It is the “raw” measurement from the TOT channel after count conversion (see glossary) and is spectrally corrected (see glossary) to yield the unfiltered LW radiance (ES8-59) at night. The TOT and SW filtered radiances are spectrally corrected together to yield the LW and SW unfiltered radiances (ES8-29 and ES8-30) during the day.

There are 660 values of this parameter; one for each measurement.

The value of the filtered TOT radiance is defined as either “good” or “bad” by the quality flag (ES8-35). If the value is “bad”, for any reason, the TOT filtered radiance is set to a default value. If the value is “good”, the measured value is retained.

The TOT filtered radiance is a measure of all radiance that passes the TOT channel filter. The fil-

ter passes about 85% of the energy below $5\mu\text{m}$ and about 90% of the energy above $5\mu\text{m}$ (see Note 6: Spectral Correction Algorithm).

ES8-24 CERES SW filtered radiance, upwards [-10.0 to $510.0 \text{ W m}^{-2} \text{ sr}^{-1}$]

The CERES SW filtered radiance is the measured shortwave radiance at satellite altitude and is interpreted as the outgoing SW radiance at the TOA. It is the “raw” measurement from the shortwave channel after count conversion (see glossary) and is spectrally corrected (see glossary) to yield the unfiltered SW radiance (ES8-29).

There are 660 values of this parameter; one for each measurement.

The value of the SW filtered radiance is defined as either “good” or “bad” by the quality flag (ES8-36). If the value is “bad”, for any reason, the SW filtered radiance is set to a default value. If the value is “good”, the measured value is retained.

The SW filtered radiance is a measure of all radiance that passes the SW channel filter. The filter passes about 75% of the energy with a cutoff at about $5\mu\text{m}$ (see Note 6: Spectral Correction Algorithm).

ES8-25 CERES WN filtered radiance, upwards [0 to $50 \text{ W m}^{-2} \text{ sr}^{-1}$]

The CERES WN filtered radiance is the measured window radiance (8 to $12 \mu\text{m}$) at satellite altitude and is interpreted as the outgoing WN radiance at the TOA. It is the “raw” measurement from the window channel after count conversion (see glossary) and is spectrally corrected (see glossary) to yield the unfiltered WN radiance (ES8-31).

There are 660 values of this parameter; one for each measurement.

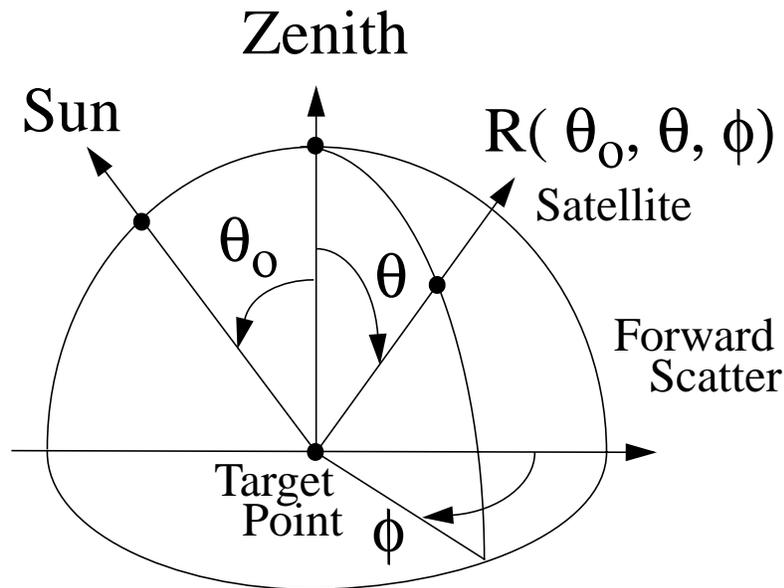
The filtered WN radiance is defined as either “good” or “bad” by the quality flag (ES8-37). If the value is “bad”, for any reason, the WN filtered radiance is set to a default value. If the value is “good”, the measured value is retained.

The WN filtered radiance is a measure of all radiance that passes the WN channel filter. The filter passes about 75% of the energy between approximately 8 to $12 \mu\text{m}$ (see Note 6: Spectral Correction Algorithm).

ES8-26 CERES viewing zenith at TOA [0.0 to 90.0 degrees]

The CERES viewing zenith at TOA is the angle θ between the zenith vector from the center of

the Earth through the target point and the view vector from the target point to the satellite.



There are 660 values of this parameter; one for each measurement.

ES8-27 CERES solar zenith at TOA [0.0 to 180.0 degrees]

The CERES solar zenith at TOA is the angle θ_o between the zenith vector from the center of the Earth through the target point and a vector from the target point to the sun (see ES8-26 sketch)

There are 660 values of this parameter; one for each measurement.

ES8-28 CERES relative azimuth at TOA [0.0 to 360.0 degrees]

The CERES relative azimuth at TOA is the azimuth angle ϕ of the satellite at the target point relative to the solar plane (see ES8-26 sketch). The azimuth is measured clockwise in the local horizon plane so that the relative azimuth of the Sun is always 180° . If the target point is north of the Sun on the same meridian, then an azimuth of 90° would imply the satellite is east of the target point.

There are 660 values of this parameter; one for each measurement.

ES8-29 CERES SW unfiltered radiance, upwards [-10.0 to 510.0 W m⁻² sr⁻¹]

The CERES ERBE-like SW unfiltered radiance at the TOA is an estimate of all the solar radiance reflected back into space and contains a correction for the thermal radiation in the shortwave measurement. At night the SW radiance is set to zero where night is defined as a solar zenith angle (ES8-27) greater than 90° at the target point.

An unfiltered scanner measurement is the integral over wavelength λ of the product of the true spectral radiance L_λ incident on the instrument and a "perfectly flat" instrument spectral response C_λ , or

$$m^i = \int_0^{\infty} C_\lambda L_\lambda d\lambda \quad i = \text{shortwave, longwave}$$

where

$$C_\lambda^{SW} = \begin{cases} 1 & 0 \leq \lambda \leq 5\mu m \\ 0 & \text{elsewhere} \end{cases}$$

$$C_\lambda^{LW} = \begin{cases} 0 & 0 \leq \lambda \leq 5\mu m \\ 1 & \text{elsewhere} \end{cases}$$

The SW and LW unfiltered measurements are estimated from the SW and TOT filtered measurements m_F^i (see ES8-23 and ES8-24) by

$$m^{SW} = B_1 m_F^{TOT} + B_2 (m_F^{SW} - 0^{SW})$$

$$m^{LW} = B_4 m_F^{TOT} + B_5 (m_F^{SW} - 0^{SW})$$

where the B's are regression coefficients and are a function of scene type, directional angles, colatitude of the target point and where the filtered measurements are "good." 0^{SW} is a shortwave offset that is either zero or the average nighttime shortwave measurement for the previous nighttime passage. 0^{SW} is updated each satellite revolution or as often as 15 times for a 24-hour period.

There are 660 values of this parameter; one for each measurement.

The unfiltered SW radiance is "good" if it contains a non-default value. If the filtered SW radiance is flagged "bad" (ES8-36), then the unfiltered SW radiance is set to default. In addition, either of the following conditions will result in the unfiltered SW radiance being set to default.

- FOV measurement level flag is bad
- SW ADM greater than or equal to 2

No other condition will cause the SW unfiltered unfiltered radiance on the ES-8 to be set to default.

ES8-30 CERES LW unfiltered radiance, upwards [0.0 to 200.0 W m⁻² sr⁻¹]

The CERES LW unfiltered radiance at the TOA is an estimate of all thermal radiance emitted to space including shortwave thermal radiance. Frequently, however, the LW radiance is simply referred to as a broadband longwave radiance from 5 to 200 μm.

At night the LW radiance I^{LW} is defined by $I^{LW} = C^{TOT} m_f^{TOT}$ where C^{TOT} is from a set of spectral correction coefficients (see glossary), m_f^{TOT} is the filtered total measurement (ES8-23), and where night is defined as a solar zenith angle (ES8-27) greater than 90° at the target point.

During the day, the LW radiance is defined by $I^{LW} = C^{TOT} m_f^{TOT} + C^{SW} (m_f^{SW} - 0^{SW})$ where C^{SW} is from a set of spectral correction coefficient (see glossary), m_f^{SW} is the filtered shortwave measurement (ES8-24), and 0^{SW} is the shortwave offset (see ES8-29).

There are 660 values of this parameter; one for each measurement.

The unfiltered LW radiance is “good” if it contains a non-default value. If the filtered TOT radiance is flagged “bad ” (ES8-35), then the unfiltered LW radiance is set to default. During the day, the unfiltered LW radiance is set to default if the filtered SW radiance is flagged “bad ”. In addition, either of the following conditions will result in the LW unfiltered radiance being set to default.

- FOV measurement level flag is bad
- SW ADM greater than or equal to 2

No other condition will cause the unfiltered LW radiance on the ES-8 to be set to default.

ES8-31 CERES WN unfiltered radiance, upwards [0.0 to 50.0 W m⁻² sr⁻¹μm⁻¹]

The CERES WN unfiltered radiance at the TOA is an estimate of the thermal radiance emitted to space in the 8 to 12 μm window. It is defined by $I^{WN} = C^{WN} m_f^{WN}$ where C^{WN} is from a set of spectral correction coefficients (see glossary), and m_f^{WN} is the filtered shortwave measurement (ES8-25). Note that the filtered radiance m_f^{WN} is in units of Wm⁻²sr⁻¹ while the unfiltered radiance is in units of Wm⁻²sr⁻¹μm⁻¹.

There are 660 values of this parameter; one for each measurement.

The unfiltered WN radiance is “good” if it contains a non-default value. If the filtered WN radiance is flagged “bad ” (ES8-37), then the unfiltered WN radiance is set to default. In addition, either of the following conditions will result in the WN unfiltered radiance being set to default.

- FOV measurement level flag is bad
- SW ADM greater than or equal to 2

No other condition will cause the unfiltered WN radiance on the ES-8 to be set to default.

ES8-32 CERES SW flux at TOA, upwards [0.0 to 1400.0 W m⁻²]

The CERES SW flux at TOA is an estimate of the solar flux reflected back into space. At night the SW flux is set to zero where night is defined as a solar zenith angle (ES8-27) greater than 90° at the target point (see glossary). The SW flux is set to default when the solar zenith angle is greater than 86.5° and equal to or less than 90.0°. When the solar zenith is less than or equal to 86.5°, the SW flux \hat{M}^{SW} is given by

$$\hat{M}^{SW} = \frac{\pi I^{SW}}{R^i(\theta, \phi, \theta_o)}$$

where I^{SW} is the shortwave unfiltered radiance (ES8-29), and R is the anisotropy (or ADM see Note 8) for the i^{th} scene type (ES8-34); and R is evaluated at the viewing zenith angle θ (ES8-26), relative azimuth angle ϕ (ES8-28), and solar zenith angle θ_o (ES8-27).

There are 660 values of this parameter; one for each measurement.

The SW flux is set to default if the SW unfiltered radiance (ES8-29) is default (including $R^i \geq 2$), or if the ERBE scene type (ES8-34) is unknown. In addition, the SW flux is set to default for any of the following conditions.

- Viewing Zenith (ES8-26) is greater than 70° ($\theta > 70^\circ$)
- Instrument is operating in the rapid retrace mode (see ES8-39)

No other condition will cause the SW flux at the TOA on the ES-8 to be set to default.

ES8-33 CERES LW flux at TOA, upwards [0.0 to 500.0 W m⁻²]

The CERES LW flux at TOA is an estimate of the thermal flux emitted to space including short-wave thermal flux. The LW flux \hat{M}^{LW} is given by

$$\hat{M}^{LW} = \frac{\pi I^{LW}}{R^i(\theta, \Theta)}$$

where I^{LW} is the longwave unfiltered radiance (ES8-30), and R is the anisotropy (or ADM see Note 8) for the i^{th} ERBE scene type (ES8-34); and R is evaluated at the viewing zenith angle θ (ES8-26) and at the colatitude of the FOV (ES8-2).

There are 660 values of this parameter; one for each measurement.

The LW flux is set to default if the LW unfiltered radiance (ES8-30) is default, or if the ERBE scene type (ES8-34) is unknown. In addition, the LW flux is set to default for any of the follow-

ing conditions.

- Viewing Zenith (ES8-26) is greater than 70° ($\theta > 70^\circ$)
- Instrument is operating in the rapid retrace mode (see ES8-39)

No other condition will cause the LW flux at the TOA on the ES-8 to be set to default.

ES8-34 ERBE Scene Identification [0 to 12]

This is the ERBE scene classification of the scanner FOV. The 13 possible scene types are listed below.

ES-8 VALUE	DESCRIPTION OF SCENE
0.X	unknown scene
1.X	clear ocean
2.X	clear land
3.X	clear snow
4.X	clear desert
5.X	clear land-ocean mix
6.X	partly cloudy over ocean
7.X	partly cloudy over land or desert
8.X	partly cloudy over land-ocean mix
9.X	mostly cloudy over ocean
10.X	mostly cloudy over land or desert
11.X	mostly cloudy over land-ocean mix
12.X	overcast

where X equals 0, 1, 2, 3, 4 for ocean, land, snow, desert, land-ocean mix, respectively. The decimal defines the geographic scene so that 12.1 would indicate overcast over land. Care should be taken in determining the geographic scene because of computer characteristics. A useful fortran code is

$$ISCENE = NINT(ES8(34))$$

$$IX = NINT((ES8(34) - REAL(ISCENE)) * 10.0)$$

where NINT is the nearest integer operator.

A land-ocean mix scene denotes 50% land and 50% ocean and is used for coastal areas. Clear scenes have 0 to 5% cloud cover. Partly cloudy scenes have 5 to 50% cloud cover and mostly cloudy scenes have 50 to 95% cloud cover. An overcast scene denotes 95 to 100% cloud cover.

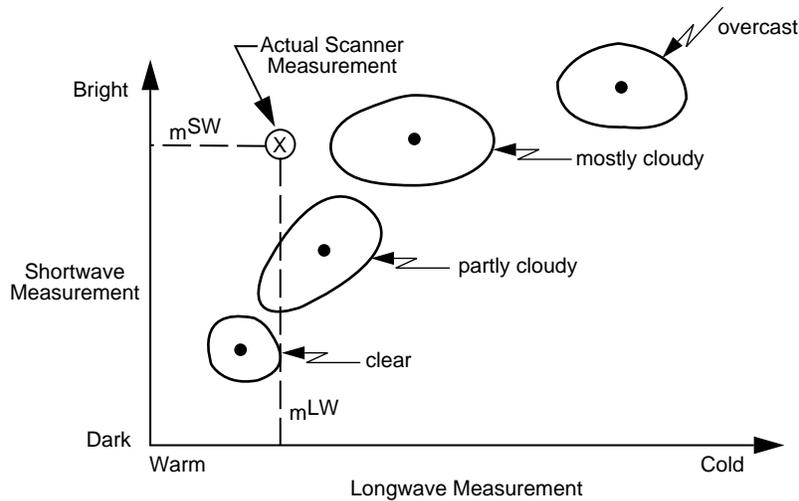
Based on the unfiltered scanner measurements,

$$m^{SW} = ES8(29)$$

and

$$m^{LW} = ES8(30),$$

the scene corresponding to each scanner measurement is identified as one of four cloud conditions over a predetermined geographic or surface type. The first step is to determine the 2.5° region that contains the scanner target point given by ES8-2 and ES8-3. From apriori physical data, we then determine the geographic scene as either ocean, land, snow, desert, or land-ocean mix. Next we determine the cloud condition.



An example of a typical scene identification is shown in the figure. Knowing the geographic scene and the directional angles ES8-26, ES8-27, ES8-28, we can evaluate from apriori data the measurements we would expect from a clear sky, partly cloudy, mostly cloudy, and overcast conditions. The ellipse about each point represents the variance we would expect. The identification consists of determining which one of the four cloud conditions produced the actual measurement or which is the closest point in a probabilistic sense.

ES8-35 Total Channel Flags [0 to 1].

There are a set of radiometric flags (good (=0)/bad (=1)) for the total (ES8-23), shortwave (ES8-24), and window (ES8-25) radiometric channels. In addition, there will be a set of flags (good (=0)/bad (=1)) for the FOV (ES8-38) associated with the radiometric measurements. The total, shortwave, and window channel flags and scanner FOV flags are located in ES8-35, ES8-36, ES8-37, and ES8-38, respectively. These flags are implemented on the ES-8 as they were on the ERBE S-8, except that the ES-8 will contain measurement level flags for each of the CERES 660 measurements as shown in the table.

	32 ^a	31 ^b	30	29	28	27	26	25 <---> 6	5	4	3	2	1	
1			30	29					5	4	3	2	1	
2			60											31
3			90											
4			120											
.														
.														
.														
.														
20			600											
21			630											
22			660	659	658	657	656			635	634	633	632	631

- a. Sign Bit
- b. Extra Bit

Note that the flag scheme for each set of flags (shortwave channel, total channel, window channel, and FOV) is based on 22 32-bit words. **Each bit will contain either a “0” or “1”. A “0” means the associated radiometric value (or FOV) is good, and a “1” means that it is bad.**

Also, note that 22 words x 30 bits/word = 660 bits where each bit contains a measurement level flag. Bit 32 is the sign bit, and bit 31 is extra.

The first of the twenty-two 32-bit words for the total channel begins at ES8-35.

ES8-36 Shortwave Channel Flags [0 to 1]

The total, shortwave, and window channel radiometric measurement level flags and scanner FOV flags are described under ES8-35.

The first of the twenty-two 32-bit words for the shortwave channel flags begins at ES8-36.

ES8-37 Window Channel Flags [0 to 1]

The total, shortwave, and window channel radiometric measurement level flags and scanner FOV flags are described under ES8-35.

The first of the twenty-two 32-bit words for the window channel flags begins at ES8-37.

ES8-38 Scanner Field-of-View (FOV) Flags [0 to 1]

The total, shortwave, and window channel radiometric measurement level flags and scanner FOV flags are described under ES8-35.

The first of the twenty-two 32-bit words for the scanner FOV flags begins at ES8-38.

The values in the table below are from the BDS Collection Guide for Radiance and Mode Flags (BDS-17), specifically, the CERES FOV Flag. A good FOV on the ES-8 corresponds to a value of 00 from the table. For all other values the FOV on the ES-8 is bad.

Bit Value of CERES FOV Flag (not given on ES-8)	Meaning of Earth Scans
00	Fully Earth Viewing
01	Hit TOA, Missed Earth
10	Reserved
11	Missed TOA and Earth

ES8-39 Rapid Retrace Flags [0 to 1]

The Rapid Retrace Flags are measurement level flags and are used to determine if the instrument is in the rapid retrace mode. These flags are structured similarly to the radiometric flags (see ES8-35), twenty-two 32-bit words. Each bit is associated with a scanner measurement as illustrated in the definition of ES8-35. **Each bit will contain either a "0" or "1". A "1" means the associated measurement is in the rapid retrace mode, and a "0" means that it is not in the rapid retrace mode.**

If the instrument is in the rapid retrace mode, the estimates of the TOA flux are not calculated and are left as defaults.

The first of the twenty-two 32-bit words for the rapid retrace flags begin at ES8-39.

ES8-40 Scanner Operations Flags [0 to 1]

The Scanner Operations Flags are record level flags and define the scanner condition during the 6.6-second record. Each bit of this 3-word flag is defined in the table below.

ScannerOperations Flag Word (1 of 3)

Bit Position (Right to Left)	Bit Value	Meaning
0-3	0000 0001 0010 0011 0100 0101 0110 0111 1000 1001 1010 1011 1100-1111	Instrument in Safe Mode Instrument in Standby Mode Instrument in Crosstrack Mode Instrument in Biaxial Mode Instrument in Solar Calibration Mode Instrument in Diagnostic Configuration Mode Instrument in Internal Calibration Mode Instrument in Special Short Scan Mode Instrument in Contamination Safe Mode Instrument in Hold Mode Instrument in Abbrev. Internal Calibration Mode Instrument in Fixed Azimuth mode Undefined
4-5	00 01 10,11	Elevation Motor Drive Enabled Elevation Motor Drive Disabled Undefined
6-7	00 01 10,11	Azimuth Motor Drive Enabled Azimuth Motor Drive Disabled Undefined
8-9	00 01 10 11	Instrument Previous Mode not in Solar Cal. or Internal Cal. Instrument Previous Mode in Solar Cal. Instrument Previous Mode in Internal Cal. Undefined
10-11	00 01 10,11	Instrument not in Internal Cal. Instrument in Internal Cal Undefined
12-14	000 001 010 011 100-111	SWICS Lamp off SWICS Intensity at Level 1 SWICS Intensity at Level 2 SWICS Intensity at Level 3 Undefined
15-30		Spares
31	0 1	At least one scanner radiometric value (ES8-23 - ES8-25) has both a good radiometric flag (ES8-35 - ES8-37) and a good FOV flag (ES8-38) If the above situation does not exit, record will not be included on ES-8

ScannerOperations Flag Word (2 of 3)

Bit Position (Right to Left)	Bit Value	Meaning
0-4	00000 00001 00010 00011 00100 00101 00110 00111 01000 01001 01010 01011 01100 01101 01110 01111 10000-11111	Stow Normal Earth Scan Short Earth Scan MAM Scan Nadir Scan Noise Scan 1 Noise Scan 2 Stow Minus 45 Dwell Slam Against Stop ICS Scan WFBB Scan Nadir Dwell Scan Nadir Plus 80 Dwell Nadir Minus 80 Dwell MAM uniformity Scan Step Response Scan Undefined
5-8	0000 0001 0010 0011 0100 0101 0110 0111 1000 1001 1010 1011-1111	Go To Position Crosstrack Go To Position A Go To Position B Go To Position Solar Calibration Go To Position Caged Go To Position Spare 1 Go To Position Spare 2 Go To Position Spare 3 Scan A B Asynchronously Scan A B Synchronously Stop Azimuth Undefined
9-11	000 001 010 011 100 101-111	Normal Scan Operation Initialization In Progress At Initialized Position Scan Abort In Progress Elevation At Aborted Position Undefined
12-14	000 001 010 011 100 101-111	Azimuth At Go To Position Azimuth At Stopped Position Azimuth At Initial Position Azimuth At Scan Position Azimuth In Motion Undefined

Bit Position (Right to Left)	Bit Value	Meaning
15	0 1	Instrument in Biaxial mode and azimuth is moving forward from 90 ⁰ toward 270 ⁰ . Instrument in Biaxial mode and azimuth is moving backward from 270 ⁰ toward 90 ⁰ .
16-31		Spares

ScannerOperations Flag Word (3 of 3)

Bit Position (Right to Left)	Bit Value	Meaning
0	0 1	Instrument In FAPS Mode Instrument In RAPS Mode
1-31		Spares

4.3.3 Fill Values

On the ES-8 product the default value is 32767. (2¹⁵-1), a 32-bit real number. Individual parameter definitions in the previous section explain how and when the default value is used. All parameters that are calculated and provided on the ES-8 product by the ERBE-like Inversion Subsystem are initialized as default values and are only redefined after a good value for that parameter has been determined.

4.4 Sample Data Record

To assist in reading and using the ES-8 science data product, a 50-record ES-8 HDF-EOS test file, CER_ES8_TRMM-PFM_AtLaunch_00000.19980101.TestFile, was created using CERES TRMM data from January 1, 1998. The first data record from the test file is listed below.

In the list the following conventions are used. ES-8 parameters are listed according to their parameter number, n, (ES8-n) and parameter name as given in Table 4.3-1. Thereafter, the various values for each parameter (see the previous section, [4.3.2 Variable Description/Definition](#) for parameter details), which come from the xpat array in the ERBE-like Inversion code, are listed according to their xpat element number "(xxx)" and sequential value number for the parameter "[xxx]". The xpat element number ranges from 1 to 9374, the maximum number of elements in the xpat array. The sequential value number for the parameter ranges from 1 to a maximum of 660,

the maximum number of measurements during an ES-8 6.6-second record.

For example, the second parameter on the ES-8 HDF-EOS product is the "Colatitude of CERES FOV at TOA". As shown in the listing, this parameter begins in the xpat array at element number 135 and extends to element number 794. The listing also shows that there are 660 values for this parameter, one for each measurement contained in this record. The binary file from which the HDF-EOS product is created consists of time sequential records which contain the xpat array.

Note that the Time of Observation, the first ES-8 HDF-EOS parameter, contains only one value, though in the code and on the binary file it is maintained as a whole Julian Date or Julian Day (xpat (1)) and as a fractional Julian Date or Julian Time (xpat (2)).

The listing on record 1 from the ES-8 test file follows.

```

ES8-1: Time of Observation
xpat( 1) + xpat( 2)          2450814.500019105

ES8-2: Colatitude of CERES FOV at TOA
xpat( 135) [ 1] 32767.000 32767.000 32767.000 32767.000 32767.000
xpat( 140) [ 6] 32767.000 32767.000 32767.000 32767.000 32767.000
xpat( 145) [ 11] 32767.000 32767.000 32767.000 32767.000 32767.000
xpat( 150) [ 16] 32767.000 32767.000 32767.000 32767.000 32767.000
xpat( 155) [ 21] 32767.000 32767.000 32767.000 32767.000 32767.000
xpat( 160) [ 26] 32767.000 32767.000 32767.000 32767.000 32767.000
xpat( 165) [ 31] 32767.000 32767.000 32767.000 32767.000 32767.000
xpat( 170) [ 36] 32767.000 32767.000 32767.000 32767.000 32767.000
xpat( 175) [ 41] 32767.000 32767.000 32767.000 32767.000 32767.000
xpat( 180) [ 46] 32767.000 32767.000 32767.000 32767.000 32767.000
xpat( 185) [ 51] 32767.000 32767.000 32767.000 32767.000 32767.000
xpat( 190) [ 56] 32767.000 32767.000 44.929 45.540 46.062
xpat( 195) [ 61] 46.517 46.920 47.281 47.608 47.904
xpat( 200) [ 66] 48.180 48.433 48.666 48.887 49.090
xpat( 205) [ 71] 49.282 49.463 49.634 49.795 49.949
xpat( 210) [ 76] 50.095 50.234 50.366 50.493 50.614
xpat( 215) [ 81] 50.730 50.842 50.949 51.052 51.152
xpat( 220) [ 86] 51.248 51.340 51.430 51.516 51.600
xpat( 225) [ 91] 51.682 51.761 51.838 51.912 51.985
xpat( 230) [ 96] 52.055 52.124 52.190 52.256 52.320
xpat( 235) [ 101] 52.382 52.443 52.502 52.560 52.617
xpat( 240) [ 106] 52.673 52.728 52.781 52.834 52.885
xpat( 245) [ 111] 52.936 52.985 53.034 53.082 53.129
xpat( 250) [ 116] 53.175 53.221 53.266 53.310 53.354
xpat( 255) [ 121] 53.397 53.439 53.481 53.522 53.563
xpat( 260) [ 126] 53.603 53.643 53.682 53.721 53.759
xpat( 265) [ 131] 53.797 53.835 53.872 53.909 53.945
xpat( 270) [ 136] 53.981 54.018 54.053 54.088 54.123
xpat( 275) [ 141] 54.158 54.192 54.226 54.260 54.294
xpat( 280) [ 146] 54.327 54.361 54.394 54.427 54.460
xpat( 285) [ 151] 54.492 54.525 54.557 54.589 54.621
xpat( 290) [ 156] 54.653 54.685 54.717 54.748 54.780
xpat( 295) [ 161] 54.812 54.843 54.875 54.906 54.937
xpat( 300) [ 166] 54.969 55.000 55.031 55.062 55.094
xpat( 305) [ 171] 55.125 55.156 55.188 55.219 55.250
xpat( 310) [ 176] 55.282 55.313 55.345 55.377 55.409
xpat( 315) [ 181] 55.441 55.473 55.505 55.537 55.569
xpat( 320) [ 186] 55.602 55.635 55.667 55.700 55.733
xpat( 325) [ 191] 55.767 55.801 55.834 55.868 55.902
xpat( 330) [ 196] 55.937 55.972 56.007 56.042 56.078
xpat( 335) [ 201] 56.114 56.150 56.187 56.223 56.261
xpat( 340) [ 206] 56.299 56.337 56.376 56.414 56.454
xpat( 345) [ 211] 56.494 56.534 56.575 56.616 56.658
xpat( 350) [ 216] 56.701 56.744 56.788 56.833 56.878
xpat( 355) [ 221] 56.924 56.970 57.017 57.066 57.115
xpat( 360) [ 226] 57.165 57.216 57.268 57.320 57.374
xpat( 365) [ 231] 57.429 57.485 57.543 57.601 57.661
xpat( 370) [ 236] 57.723 57.786 57.850 57.915 57.983
xpat( 375) [ 241] 58.053 58.124 58.197 58.272 58.350
xpat( 380) [ 246] 58.430 58.512 58.597 58.685 58.776
xpat( 385) [ 251] 58.869 58.967 59.068 59.172 59.281
xpat( 390) [ 256] 59.394 59.513 59.635 59.765 59.899

```

xpat(395) [261]	60.040	60.189	60.344	60.509	60.684
xpat(400) [266]	60.869	61.065	61.275	61.500	61.741
xpat(405) [271]	62.002	62.282	62.593	62.932	63.305
xpat(410) [276]	63.730	64.204	64.757	65.417	32767.000
xpat(415) [281]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(420) [286]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(425) [291]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(430) [296]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(435) [301]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(440) [306]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(445) [311]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(450) [316]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(455) [321]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(460) [326]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(465) [331]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(470) [336]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(475) [341]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(480) [346]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(485) [351]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(490) [356]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(495) [361]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(500) [366]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(505) [371]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(510) [376]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(515) [381]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(520) [386]	32767.000	32767.000	65.139	64.534	64.013
xpat(525) [391]	63.554	63.156	62.792	62.468	62.170
xpat(530) [396]	61.896	61.644	61.409	61.191	60.986
xpat(535) [401]	60.794	60.614	60.444	60.281	60.130
xpat(540) [406]	59.984	59.844	59.713	59.586	59.464
xpat(545) [411]	59.349	59.237	59.130	59.027	58.927
xpat(550) [416]	58.831	58.739	58.649	58.562	58.479
xpat(555) [421]	58.397	58.319	58.241	58.167	58.095
xpat(560) [426]	58.024	57.956	57.889	57.824	57.760
xpat(565) [431]	57.698	57.637	57.577	57.519	57.462
xpat(570) [436]	57.407	57.352	57.299	57.247	57.195
xpat(575) [441]	57.144	57.094	57.046	56.998	56.951
xpat(580) [446]	56.905	56.859	56.814	56.770	56.726
xpat(585) [451]	56.683	56.641	56.599	56.558	56.517
xpat(590) [456]	56.477	56.437	56.398	56.359	56.321
xpat(595) [461]	56.282	56.245	56.208	56.171	56.135
xpat(600) [466]	56.098	56.063	56.027	55.992	55.957
xpat(605) [471]	55.922	55.888	55.853	55.820	55.786
xpat(610) [476]	55.752	55.719	55.686	55.653	55.620
xpat(615) [481]	55.588	55.555	55.523	55.491	55.458
xpat(620) [486]	55.426	55.395	55.363	55.331	55.299
xpat(625) [491]	55.268	55.236	55.205	55.174	55.142
xpat(630) [496]	55.111	55.080	55.049	55.017	54.986
xpat(635) [501]	54.955	54.923	54.892	54.860	54.829
xpat(640) [506]	54.797	54.766	54.734	54.703	54.671
xpat(645) [511]	54.639	54.607	54.575	54.543	54.510
xpat(650) [516]	54.478	54.445	54.412	54.379	54.346
xpat(655) [521]	54.312	54.279	54.245	54.211	54.177
xpat(660) [526]	54.142	54.107	54.072	54.037	54.001
xpat(665) [531]	53.965	53.929	53.892	53.855	53.818
xpat(670) [536]	53.780	53.742	53.704	53.665	53.625
xpat(675) [541]	53.585	53.545	53.504	53.463	53.421
xpat(680) [546]	53.377	53.335	53.291	53.246	53.201
xpat(685) [551]	53.155	53.108	53.061	53.013	52.963
xpat(690) [556]	52.913	52.863	52.811	52.758	52.704
xpat(695) [561]	52.649	52.593	52.536	52.477	52.416
xpat(700) [566]	52.356	52.292	52.228	52.162	52.095
xpat(705) [571]	52.025	51.954	51.880	51.805	51.727
xpat(710) [576]	51.647	51.565	51.480	51.392	51.302
xpat(715) [581]	51.208	51.110	51.009	50.905	50.796
xpat(720) [586]	50.682	50.564	50.441	50.312	50.177
xpat(725) [591]	50.035	49.887	49.730	49.565	49.390
xpat(730) [596]	49.207	49.008	48.798	48.575	48.331
xpat(735) [601]	48.072	47.789	47.480	47.141	46.764
xpat(740) [606]	46.342	45.863	45.309	44.654	32767.000
xpat(745) [611]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(750) [616]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(755) [621]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(760) [626]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(765) [631]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(770) [636]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(775) [641]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(780) [646]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(785) [651]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(790) [656]	32767.000	32767.000	32767.000	32767.000	32767.000

ES8-3: Longitude of CERES FOV at TOA

xpat(795) [1]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(800) [6]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(805) [11]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(810) [16]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(815) [21]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(820) [26]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(825) [31]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(830) [36]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(835) [41]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(840) [46]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(845) [51]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(850) [56]	32767.000	32767.000	167.087	167.098	167.106	167.106
xpat(855) [61]	167.114	167.121	167.127	167.132	167.137	167.137
xpat(860) [66]	167.142	167.146	167.150	167.154	167.158	167.158
xpat(865) [71]	167.161	167.164	167.167	167.170	167.173	167.173
xpat(870) [76]	167.176	167.178	167.181	167.183	167.186	167.186
xpat(875) [81]	167.188	167.190	167.192	167.194	167.196	167.196
xpat(880) [86]	167.198	167.200	167.202	167.204	167.206	167.206
xpat(885) [91]	167.208	167.209	167.211	167.213	167.215	167.215
xpat(890) [96]	167.216	167.218	167.219	167.221	167.223	167.223
xpat(895) [101]	167.224	167.226	167.227	167.229	167.230	167.230
xpat(900) [106]	167.231	167.233	167.234	167.236	167.237	167.237
xpat(905) [111]	167.238	167.240	167.241	167.242	167.244	167.244
xpat(910) [116]	167.245	167.246	167.248	167.249	167.250	167.250
xpat(915) [121]	167.251	167.253	167.254	167.255	167.256	167.256
xpat(920) [126]	167.258	167.259	167.260	167.261	167.263	167.263
xpat(925) [131]	167.264	167.265	167.266	167.267	167.268	167.268
xpat(930) [136]	167.270	167.271	167.272	167.273	167.274	167.274
xpat(935) [141]	167.275	167.277	167.278	167.279	167.280	167.280
xpat(940) [146]	167.281	167.282	167.283	167.284	167.286	167.286
xpat(945) [151]	167.287	167.288	167.289	167.290	167.291	167.291
xpat(950) [156]	167.292	167.293	167.294	167.296	167.297	167.297
xpat(955) [161]	167.298	167.299	167.300	167.301	167.302	167.302
xpat(960) [166]	167.303	167.304	167.305	167.306	167.308	167.308
xpat(965) [171]	167.309	167.310	167.311	167.312	167.313	167.313
xpat(970) [176]	167.314	167.315	167.316	167.317	167.318	167.318
xpat(975) [181]	167.319	167.320	167.322	167.323	167.324	167.324
xpat(980) [186]	167.325	167.326	167.327	167.328	167.329	167.329
xpat(985) [191]	167.330	167.331	167.332	167.333	167.335	167.335
xpat(990) [196]	167.336	167.337	167.338	167.339	167.340	167.340
xpat(995) [201]	167.341	167.342	167.343	167.344	167.346	167.346
xpat(1000) [206]	167.347	167.348	167.349	167.350	167.351	167.351
xpat(1005) [211]	167.352	167.353	167.355	167.356	167.357	167.357
xpat(1010) [216]	167.358	167.359	167.360	167.362	167.363	167.363
xpat(1015) [221]	167.364	167.365	167.366	167.367	167.369	167.369
xpat(1020) [226]	167.370	167.371	167.372	167.373	167.375	167.375
xpat(1025) [231]	167.376	167.377	167.378	167.380	167.381	167.381
xpat(1030) [236]	167.382	167.384	167.385	167.386	167.388	167.388
xpat(1035) [241]	167.389	167.390	167.392	167.393	167.395	167.395
xpat(1040) [246]	167.396	167.397	167.399	167.400	167.402	167.402
xpat(1045) [251]	167.404	167.405	167.407	167.408	167.410	167.410
xpat(1050) [256]	167.412	167.413	167.415	167.417	167.419	167.419
xpat(1055) [261]	167.421	167.423	167.425	167.427	167.429	167.429
xpat(1060) [266]	167.431	167.434	167.436	167.439	167.441	167.441
xpat(1065) [271]	167.444	167.447	167.450	167.454	167.457	167.457
xpat(1070) [276]	167.461	167.466	167.471	167.476	32767.000	32767.000
xpat(1075) [281]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1080) [286]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1085) [291]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1090) [296]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1095) [301]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1100) [306]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1105) [311]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1110) [316]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1115) [321]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1120) [326]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1125) [331]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1130) [336]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1135) [341]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1140) [346]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1145) [351]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1150) [356]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1155) [361]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1160) [366]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1165) [371]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1170) [376]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1175) [381]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1180) [386]	32767.000	32767.000	167.547	167.544	167.541	167.541
xpat(1185) [391]	167.539	167.537	167.535	167.533	167.532	167.532
xpat(1190) [396]	167.531	167.530	167.529	167.528	167.527	167.527

xpat(1195) [401]	167.526	167.526	167.525	167.525	167.524
xpat(1200) [406]	167.524	167.524	167.524	167.523	167.523
xpat(1205) [411]	167.523	167.523	167.523	167.523	167.523
xpat(1210) [416]	167.523	167.523	167.523	167.523	167.523
xpat(1215) [421]	167.523	167.523	167.524	167.524	167.524
xpat(1220) [426]	167.524	167.524	167.525	167.525	167.525
xpat(1225) [431]	167.526	167.526	167.526	167.526	167.527
xpat(1230) [436]	167.527	167.527	167.528	167.528	167.528
xpat(1235) [441]	167.529	167.529	167.530	167.530	167.530
xpat(1240) [446]	167.531	167.531	167.532	167.532	167.532
xpat(1245) [451]	167.533	167.533	167.534	167.534	167.535
xpat(1250) [456]	167.535	167.536	167.536	167.536	167.537
xpat(1255) [461]	167.537	167.538	167.538	167.539	167.539
xpat(1260) [466]	167.540	167.540	167.541	167.541	167.542
xpat(1265) [471]	167.542	167.543	167.543	167.544	167.544
xpat(1270) [476]	167.545	167.545	167.546	167.546	167.547
xpat(1275) [481]	167.547	167.548	167.548	167.549	167.549
xpat(1280) [486]	167.550	167.550	167.551	167.552	167.552
xpat(1285) [491]	167.553	167.553	167.554	167.554	167.555
xpat(1290) [496]	167.555	167.556	167.556	167.557	167.557
xpat(1295) [501]	167.558	167.558	167.559	167.560	167.560
xpat(1300) [506]	167.561	167.561	167.562	167.562	167.563
xpat(1305) [511]	167.563	167.564	167.564	167.565	167.565
xpat(1310) [516]	167.566	167.567	167.567	167.568	167.568
xpat(1315) [521]	167.569	167.569	167.570	167.570	167.571
xpat(1320) [526]	167.571	167.572	167.572	167.573	167.573
xpat(1325) [531]	167.574	167.574	167.575	167.575	167.576
xpat(1330) [536]	167.576	167.577	167.577	167.578	167.578
xpat(1335) [541]	167.579	167.579	167.580	167.580	167.581
xpat(1340) [546]	167.581	167.582	167.582	167.583	167.583
xpat(1345) [551]	167.584	167.584	167.585	167.585	167.586
xpat(1350) [556]	167.586	167.586	167.587	167.587	167.588
xpat(1355) [561]	167.588	167.588	167.589	167.589	167.590
xpat(1360) [566]	167.590	167.590	167.591	167.591	167.591
xpat(1365) [571]	167.592	167.592	167.592	167.592	167.593
xpat(1370) [576]	167.593	167.593	167.593	167.593	167.594
xpat(1375) [581]	167.594	167.594	167.594	167.594	167.594
xpat(1380) [586]	167.594	167.594	167.594	167.594	167.594
xpat(1385) [591]	167.593	167.593	167.593	167.593	167.592
xpat(1390) [596]	167.592	167.591	167.590	167.589	167.588
xpat(1395) [601]	167.587	167.586	167.585	167.583	167.581
xpat(1400) [606]	167.578	167.575	167.572	167.567	32767.000
xpat(1405) [611]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1410) [616]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1415) [621]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1420) [626]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1425) [631]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1430) [636]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1435) [641]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1440) [646]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1445) [651]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(1450) [656]	32767.000	32767.000	32767.000	32767.000	32767.000

ES8-4: Earth-Sun distance at record start

xpat(3) 0.983327037

ES8-5: X component of satellite position at record start

xpat(4) -5368253.500

ES8-6: X component of satellite position at record end

xpat(5) -5378511.500

ES8-7: Y component of satellite position at record start

xpat(6) 1221748.625

ES8-8: Y component of satellite position at record end

xpat(7) 1174719.125

ES8-9: Z component of satellite position at record start

xpat(8) 3850227.250

ES8-10: Z component of satellite position at record end

xpat(9) 3850548.750

ES8-11: X component of satellite velocity at record start

xpat(10) -1665.417

ES8-12: X component of satellite velocity at record end

xpat(11) -1622.519

ES8-13: Y component of satellite velocity at record start

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xpat( 12)          -7523.517

ES8-14: Y component of satellite velocity at record end
xpat( 13)          -7533.099

ES8-15: Z component of satellite velocity at record start
xpat( 14)           65.508

ES8-16: Z component of satellite velocity at record end
xpat( 15)           32.079

ES8-17: Colatitude of satellite nadir at record start
xpat( 16)           55.033

ES8-18: Colatitude of satellite nadir at record end
xpat( 17)           55.030

ES8-19: Longitude of satellite nadir at record start
xpat( 18)           167.179

ES8-20: Longitude of satellite nadir at record end
xpat( 19)           167.680

ES8-21: Colatitude of Sun at observation
xpat( 20)           113.033

ES8-22: Longitude of Sun at observation
xpat( 21)           180.814

ES8-23: CERES TOT filtered radiance
xpat(1455) [  1]  32767.000    32767.000    32767.000    32767.000
xpat(1460) [  6]  32767.000    32767.000    32767.000    32767.000
xpat(1465) [ 11]  32767.000    32767.000    32767.000    32767.000
xpat(1470) [ 16]  32767.000    32767.000    32767.000    32767.000
xpat(1475) [ 21]  32767.000    32767.000    32767.000    32767.000
xpat(1480) [ 26]  32767.000    32767.000    32767.000    32767.000
xpat(1485) [ 31]  32767.000    32767.000    32767.000    32767.000
xpat(1490) [ 36]  32767.000    32767.000    32767.000    32767.000
xpat(1495) [ 41]  32767.000    32767.000    32767.000    32767.000
xpat(1500) [ 46]  32767.000    32767.000    32767.000    32767.000
xpat(1505) [ 51]  32767.000    32767.000    32767.000    32767.000
xpat(1510) [ 56]  32767.000    32767.000    32767.000    32767.000
xpat(1515) [ 61]  32767.000    32767.000    32767.000    32767.000
xpat(1520) [ 66]  32767.000    32767.000    32767.000    32767.000
xpat(1525) [ 71]  32767.000    32767.000    32767.000    32767.000
xpat(1530) [ 76]  32767.000    32767.000    32767.000    32767.000
xpat(1535) [ 81]  32767.000    32767.000    32767.000    32767.000
xpat(1540) [ 86]  32767.000    32767.000    32767.000    32767.000
xpat(1545) [ 91]  32767.000    32767.000    32767.000    32767.000
xpat(1550) [ 96]  32767.000    32767.000    32767.000    32767.000
xpat(1555) [101]  32767.000    32767.000    32767.000    32767.000
xpat(1560) [106]  32767.000    32767.000    32767.000    32767.000
xpat(1565) [111]  32767.000    32767.000    32767.000    32767.000
xpat(1570) [116]  32767.000    32767.000    32767.000    32767.000
xpat(1575) [121]  32767.000    32767.000    32767.000    32767.000
xpat(1580) [126]  32767.000    32767.000    32767.000    32767.000
xpat(1585) [131]  32767.000    32767.000    32767.000    32767.000
xpat(1590) [136]  32767.000    32767.000    32767.000    32767.000
xpat(1595) [141]  32767.000    32767.000    32767.000    32767.000
xpat(1600) [146]  32767.000    32767.000    32767.000    32767.000
xpat(1605) [151]  32767.000    32767.000    32767.000    32767.000
xpat(1610) [156]  32767.000    32767.000    32767.000    32767.000
xpat(1615) [161]  32767.000    32767.000    32767.000    32767.000
xpat(1620) [166]  32767.000    32767.000    32767.000    32767.000
xpat(1625) [171]  32767.000    32767.000    32767.000    32767.000
xpat(1630) [176]  32767.000    32767.000    32767.000    32767.000
xpat(1635) [181]  32767.000    32767.000    32767.000    32767.000
xpat(1640) [186]  32767.000    32767.000    32767.000    32767.000
xpat(1645) [191]  32767.000    32767.000    32767.000    32767.000
xpat(1650) [196]  32767.000    32767.000    32767.000    32767.000
xpat(1655) [201]  32767.000    32767.000    32767.000    32767.000
xpat(1660) [206]  32767.000    32767.000    32767.000    32767.000
xpat(1665) [211]  32767.000    32767.000    32767.000    32767.000
xpat(1670) [216]  32767.000    32767.000    32767.000    32767.000
xpat(1675) [221]  32767.000    32767.000    32767.000    32767.000
xpat(1680) [226]  32767.000    32767.000    32767.000    32767.000
xpat(1685) [231]  32767.000    32767.000    32767.000    32767.000
xpat(1690) [236]  32767.000    32767.000    32767.000    32767.000
xpat(1695) [241]  32767.000    32767.000    32767.000    32767.000
xpat(1700) [246]  32767.000    32767.000    32767.000    32767.000
xpat(1705) [251]  32767.000    32767.000    32767.000    32767.000

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ES8-24: CERES SW filtered radiance

xpat(2115) [1]	0.181	0.203	0.197	0.219	0.203
xpat(2120) [6]	0.197	0.343	0.343	0.338	0.329
xpat(2125) [11]	0.191	0.080	0.080	-0.004	0.028
xpat(2130) [16]	0.150	0.012	-0.123	0.118	0.226
xpat(2135) [21]	0.237	0.131	0.014	0.142	0.147
xpat(2140) [26]	0.014	0.003	0.011	0.001	0.111
xpat(2145) [31]	0.111	0.122	0.260	0.130	-0.103
xpat(2150) [36]	-0.095	0.043	0.152	0.011	0.008
xpat(2155) [41]	0.151	0.054	0.189	0.175	0.192
xpat(2160) [46]	0.211	0.216	0.327	0.332	0.349
xpat(2165) [51]	0.340	1.592	10.442	34.643	62.432
xpat(2170) [56]	78.127	81.212	78.233	73.248	68.529
xpat(2175) [61]	65.926	66.448	67.581	66.316	64.696
xpat(2180) [66]	66.722	71.476	77.081	80.702	80.602
xpat(2185) [71]	80.480	81.983	82.845	80.095	75.831
xpat(2190) [76]	69.863	63.243	57.256	49.915	42.346
xpat(2195) [81]	37.602	34.864	34.376	35.614	37.738
xpat(2200) [86]	39.108	38.241	35.912	34.172	39.029
xpat(2205) [91]	53.595	71.044	77.764	72.896	66.798
xpat(2210) [96]	64.810	68.662	76.851	82.857	85.869
xpat(2215) [101]	87.995	89.128	91.254	94.865	97.593
xpat(2220) [106]	97.717	96.474	95.361	94.361	92.240
xpat(2225) [111]	89.514	87.659	88.526	92.648	97.384
xpat(2230) [116]	96.270	87.691	76.357	66.268	60.786
xpat(2235) [121]	59.761	61.511	63.651	66.639	71.356
xpat(2240) [126]	74.714	74.996	70.280	59.821	50.979
xpat(2245) [131]	49.730	50.217	46.739	39.379	32.690
xpat(2250) [136]	32.186	40.522	55.859	67.949	74.435
xpat(2255) [141]	76.439	71.205	69.702	77.937	91.522
xpat(2260) [146]	104.465	110.189	103.834	90.872	83.552
xpat(2265) [151]	81.675	79.288	72.806	64.717	62.725
xpat(2270) [156]	68.839	74.940	74.840	67.970	59.629
xpat(2275) [161]	54.140	54.400	58.017	59.501	55.879
xpat(2280) [166]	45.518	33.671	27.443	27.592	33.831
xpat(2285) [171]	44.193	53.533	55.892	50.420	47.302
xpat(2290) [176]	53.405	64.972	76.466	81.351	80.494
xpat(2295) [181]	86.977	105.281	114.508	92.340	54.328
xpat(2300) [186]	28.669	18.058	14.423	13.304	14.317
xpat(2305) [191]	16.937	19.163	19.307	17.795	18.906
xpat(2310) [196]	25.022	32.995	37.099	36.955	33.848
xpat(2315) [201]	27.528	20.680	17.050	15.923	15.795
xpat(2320) [206]	15.922	16.193	16.193	17.074	17.333
xpat(2325) [211]	17.713	18.322	18.918	19.419	20.313
xpat(2330) [216]	21.443	22.686	23.794	24.929	25.538
xpat(2335) [221]	25.904	26.153	26.158	26.185	26.814
xpat(2340) [226]	30.062	37.040	48.504	69.203	96.365
xpat(2345) [231]	119.435	135.667	142.032	145.397	149.116
xpat(2350) [236]	145.234	133.269	122.793	119.664	126.266
xpat(2355) [241]	134.875	138.229	139.350	143.977	149.820
xpat(2360) [246]	150.337	143.846	127.633	107.923	101.925
xpat(2365) [251]	111.282	124.513	135.852	141.218	136.245
xpat(2370) [256]	130.510	136.131	149.849	158.693	161.180
xpat(2375) [261]	165.046	167.421	162.193	156.946	160.657
xpat(2380) [266]	167.524	168.166	163.555	163.926	170.807
xpat(2385) [271]	173.676	175.285	181.372	189.718	193.342
xpat(2390) [276]	192.852	186.621	170.433	152.876	129.070
xpat(2395) [281]	97.527	61.869	30.201	12.276	5.439
xpat(2400) [286]	2.966	1.971	1.470	1.329	1.196
xpat(2405) [291]	1.074	0.971	0.868	0.733	0.744
xpat(2410) [296]	0.738	0.744	0.765	0.630	0.621
xpat(2415) [301]	0.619	0.459	0.469	0.478	0.459
xpat(2420) [306]	0.385	0.247	0.263	0.396	0.412
xpat(2425) [311]	0.418	0.417	0.398	0.274	0.417
xpat(2430) [316]	1.170	4.039	8.273	8.798	5.846
xpat(2435) [321]	3.378	1.996	1.240	0.831	0.842
xpat(2440) [326]	0.880	0.796	0.863	0.972	0.847
xpat(2445) [331]	0.860	0.749	0.736	0.868	1.004
xpat(2450) [336]	0.871	0.749	0.874	0.860	0.825
xpat(2455) [341]	0.578	0.594	0.589	0.705	0.832
xpat(2460) [346]	1.201	3.200	7.954	10.037	8.737
xpat(2465) [351]	6.258	3.023	1.192	0.450	0.320
xpat(2470) [356]	0.162	0.165	0.081	0.187	0.062
xpat(2475) [361]	-0.071	-0.052	0.075	0.100	0.129
xpat(2480) [366]	0.119	0.097	0.121	-0.012	0.113
xpat(2485) [371]	0.229	0.240	0.148	0.264	0.261
xpat(2490) [376]	0.256	0.372	0.353	0.372	0.397
xpat(2495) [381]	0.516	2.366	13.689	39.221	71.389
xpat(2500) [386]	104.790	130.233	151.538	171.346	182.445
xpat(2505) [391]	188.041	188.290	183.192	179.955	181.331

xpat(2510) [396]	177.110	167.274	164.272	167.892	169.633
xpat(2515) [401]	165.502	159.995	160.396	165.870	167.125
xpat(2520) [406]	165.030	166.054	164.556	152.212	135.996
xpat(2525) [411]	131.753	137.605	140.969	139.842	136.242
xpat(2530) [416]	130.643	124.897	121.768	124.897	134.251
xpat(2535) [421]	144.983	148.854	147.112	146.235	146.357
xpat(2540) [426]	144.506	140.524	139.411	148.518	156.490
xpat(2545) [431]	146.280	132.172	135.791	142.401	134.166
xpat(2550) [436]	122.604	115.138	110.785	104.175	94.338
xpat(2555) [441]	87.252	81.631	69.687	51.112	34.666
xpat(2560) [446]	28.183	34.143	43.518	44.786	36.432
xpat(2565) [451]	25.585	20.348	19.744	19.362	18.371
xpat(2570) [456]	17.374	16.756	16.512	16.493	16.366
xpat(2575) [461]	16.108	15.726	15.493	15.130	14.767
xpat(2580) [466]	14.504	14.391	14.282	14.285	14.025
xpat(2585) [471]	13.789	13.667	13.932	14.813	15.417
xpat(2590) [476]	14.672	13.918	13.650	13.799	14.303
xpat(2595) [481]	14.812	15.451	17.334	21.671	29.383
xpat(2600) [486]	45.726	71.775	93.959	104.683	108.969
xpat(2605) [491]	103.976	89.751	82.770	90.247	99.200
xpat(2610) [496]	104.547	110.044	114.906	116.531	118.512
xpat(2615) [501]	119.032	113.947	110.328	111.587	114.069
xpat(2620) [506]	113.321	109.336	103.858	99.760	95.523
xpat(2625) [511]	92.405	97.108	108.797	115.764	108.929
xpat(2630) [516]	96.365	91.738	92.632	88.885	80.423
xpat(2635) [521]	72.848	71.353	71.973	69.099	64.732
xpat(2640) [526]	64.477	75.944	102.131	129.912	140.257
xpat(2645) [531]	133.024	121.942	117.225	117.951	116.700
xpat(2650) [536]	108.375	96.681	88.565	84.826	81.686
xpat(2655) [541]	78.200	77.092	76.225	77.598	86.069
xpat(2660) [546]	95.057	97.939	96.325	93.445	88.829
xpat(2665) [551]	82.585	79.323	80.808	83.454	84.478
xpat(2670) [556]	83.842	83.235	83.952	84.437	84.567
xpat(2675) [561]	86.808	91.925	102.760	110.722	108.376
xpat(2680) [566]	101.758	92.929	81.338	73.956	71.079
xpat(2685) [571]	67.340	63.255	59.999	57.398	56.670
xpat(2690) [576]	58.024	60.514	63.507	64.013	62.036
xpat(2695) [581]	61.150	60.895	58.024	54.413	55.770
xpat(2700) [586]	61.767	68.862	75.826	82.688	87.532
xpat(2705) [591]	89.514	89.636	88.163	88.295	90.641
xpat(2710) [596]	91.261	90.779	91.408	91.640	89.029
xpat(2715) [601]	86.667	87.171	89.026	89.505	88.151
xpat(2720) [606]	86.672	86.943	87.203	86.425	85.065
xpat(2725) [611]	75.722	50.916	24.601	9.759	4.135
xpat(2730) [616]	2.177	1.429	1.063	0.846	0.589
xpat(2735) [621]	0.467	0.461	0.364	0.502	0.472
xpat(2740) [626]	0.496	0.399	0.401	0.418	0.388
xpat(2745) [631]	0.258	0.271	0.252	0.260	0.257
xpat(2750) [636]	0.127	0.141	0.143	0.138	0.157
xpat(2755) [641]	0.157	0.173	0.184	0.170	0.189
xpat(2760) [646]	0.081	0.072	0.070	0.197	0.072
xpat(2765) [651]	0.088	-0.020	0.018	-0.129	0.007
xpat(2770) [656]	-0.123	-0.137	-0.137	0.009	0.025

ES8-25: CERES WN filtered radiance

xpat(2775) [1]	0.134	0.007	0.022	0.024	-0.070
xpat(2780) [6]	0.026	0.146	0.163	0.145	0.147
xpat(2785) [11]	0.018	0.040	0.059	0.066	0.058
xpat(2790) [16]	0.073	0.057	0.047	0.036	0.046
xpat(2795) [21]	0.058	-0.049	-0.039	0.182	0.078
xpat(2800) [26]	0.075	0.173	0.167	0.076	0.194
xpat(2805) [31]	0.080	0.087	0.086	0.088	0.078
xpat(2810) [36]	0.097	0.107	0.006	-0.030	-0.028
xpat(2815) [41]	0.095	0.220	0.111	-0.003	0.120
xpat(2820) [46]	0.130	0.147	0.247	0.261	0.291
xpat(2825) [51]	0.270	0.376	0.971	2.706	5.691
xpat(2830) [56]	8.138	8.817	8.827	8.959	9.074
xpat(2835) [61]	9.187	9.068	8.960	9.203	9.781
xpat(2840) [66]	9.672	8.890	8.187	8.071	7.957
xpat(2845) [71]	7.995	7.835	8.303	9.329	10.374
xpat(2850) [76]	11.423	12.371	12.848	13.884	15.040
xpat(2855) [81]	15.835	16.196	16.311	16.339	16.429
xpat(2860) [86]	16.692	17.165	17.406	17.407	16.826
xpat(2865) [91]	15.666	14.506	14.057	14.147	14.270
xpat(2870) [96]	14.270	14.287	13.710	12.449	11.302
xpat(2875) [101]	10.619	10.272	10.146	10.150	10.011
xpat(2880) [106]	10.023	10.171	10.379	10.610	10.967
xpat(2885) [111]	11.205	11.187	10.950	10.721	10.499
xpat(2890) [116]	10.715	11.205	11.888	12.710	13.190
xpat(2895) [121]	13.305	13.053	12.824	12.733	12.725
xpat(2900) [126]	12.757	12.633	12.959	13.998	14.930

xpat(2905) [131]	14.950	14.700	15.050	15.862	16.792
xpat(2910) [136]	17.143	16.801	16.096	15.650	15.398
xpat(2915) [141]	15.277	15.057	14.264	13.238	12.432
xpat(2920) [146]	12.183	12.177	12.410	12.868	13.119
xpat(2925) [151]	13.350	13.699	14.161	14.618	14.748
xpat(2930) [156]	14.393	13.925	14.045	14.414	14.658
xpat(2935) [161]	14.763	14.528	14.296	14.427	14.874
xpat(2940) [166]	15.693	16.616	17.086	16.849	16.287
xpat(2945) [171]	15.590	15.230	15.337	15.797	16.023
xpat(2950) [176]	15.809	15.607	15.601	15.596	15.480
xpat(2955) [181]	15.245	15.240	15.704	16.853	18.229
xpat(2960) [186]	19.398	19.858	20.219	20.226	20.113
xpat(2965) [191]	19.755	19.553	19.663	19.771	19.773
xpat(2970) [196]	19.307	18.728	18.370	18.357	18.706
xpat(2975) [201]	19.299	19.885	20.470	20.598	20.593
xpat(2980) [206]	20.693	20.690	20.707	20.701	20.595
xpat(2985) [211]	20.702	20.714	20.694	20.588	20.461
xpat(2990) [216]	20.463	20.355	20.452	20.469	20.476
xpat(2995) [221]	20.368	20.244	20.243	20.225	19.895
xpat(3000) [226]	19.419	18.737	17.365	15.614	13.888
xpat(3005) [231]	12.484	11.797	11.575	11.227	11.098
xpat(3010) [236]	11.576	12.752	13.562	13.888	13.890
xpat(3015) [241]	13.882	14.128	14.150	14.137	14.172
xpat(3020) [246]	14.388	14.865	15.644	16.461	16.941
xpat(3025) [251]	16.707	16.243	15.999	16.114	16.355
xpat(3030) [256]	16.344	16.334	16.466	16.559	16.694
xpat(3035) [261]	16.709	16.487	15.780	14.609	13.097
xpat(3040) [266]	12.065	11.607	10.686	9.075	8.046
xpat(3045) [271]	7.895	8.352	9.440	10.813	11.613
xpat(3050) [276]	11.275	10.822	11.986	13.593	14.306
xpat(3055) [281]	12.563	8.040	3.871	1.670	0.758
xpat(3060) [286]	0.544	0.433	0.317	0.200	0.180
xpat(3065) [291]	0.076	0.076	0.070	0.062	0.187
xpat(3070) [296]	0.295	0.186	0.198	0.215	0.220
xpat(3075) [301]	0.081	0.088	0.208	0.210	0.086
xpat(3080) [306]	0.098	0.098	0.095	0.081	0.209
xpat(3085) [311]	0.224	0.208	0.094	0.091	0.227
xpat(3090) [316]	1.139	4.736	11.220	18.079	21.919
xpat(3095) [321]	23.169	23.752	23.963	23.990	24.130
xpat(3100) [326]	24.147	24.121	24.199	24.244	24.223
xpat(3105) [331]	24.220	24.214	24.339	24.326	24.218
xpat(3110) [336]	24.099	24.217	24.211	24.233	24.346
xpat(3115) [341]	24.335	24.229	24.249	24.261	24.240
xpat(3120) [346]	24.260	24.121	22.362	18.183	13.560
xpat(3125) [351]	8.714	4.176	1.617	0.807	0.580
xpat(3130) [356]	0.469	0.368	0.339	0.233	0.135
xpat(3135) [361]	0.134	0.134	0.130	0.153	0.150
xpat(3140) [366]	0.159	0.136	0.042	0.032	0.019
xpat(3145) [371]	0.144	0.053	0.060	0.029	0.018
xpat(3150) [376]	0.141	0.025	0.145	0.185	0.184
xpat(3155) [381]	0.282	0.395	1.546	5.140	10.112
xpat(3160) [386]	13.253	13.927	12.664	11.146	11.050
xpat(3165) [391]	11.603	11.042	9.776	8.500	7.587
xpat(3170) [396]	7.352	8.395	9.655	10.356	10.585
xpat(3175) [401]	11.173	12.551	14.175	15.460	16.151
xpat(3180) [406]	16.400	16.381	16.265	16.026	16.063
xpat(3185) [411]	16.168	16.042	15.820	15.719	15.826
xpat(3190) [416]	15.931	16.041	16.260	16.040	15.330
xpat(3195) [421]	14.535	14.215	14.220	14.219	14.198
xpat(3200) [426]	14.067	13.956	13.608	12.579	11.202
xpat(3205) [431]	10.865	11.450	11.794	11.326	11.323
xpat(3210) [436]	12.256	13.156	13.633	13.763	13.982
xpat(3215) [441]	14.449	14.806	15.509	16.769	18.303
xpat(3220) [446]	19.092	18.722	17.813	17.491	18.303
xpat(3225) [451]	19.467	19.932	20.049	20.295	20.526
xpat(3230) [456]	20.528	20.517	20.399	20.504	20.486
xpat(3235) [461]	20.616	20.636	20.542	20.519	20.521
xpat(3240) [466]	20.643	20.660	20.761	20.649	20.639
xpat(3245) [471]	20.651	20.663	20.647	20.418	20.309
xpat(3250) [476]	20.314	20.313	20.318	20.199	20.196
xpat(3255) [481]	20.193	20.086	19.857	19.389	18.810
xpat(3260) [486]	17.760	16.726	15.802	15.336	15.230
xpat(3265) [491]	15.101	15.113	15.233	14.991	14.747
xpat(3270) [496]	14.643	14.635	14.524	14.297	14.203
xpat(3275) [501]	14.087	13.973	13.968	13.849	13.627
xpat(3280) [506]	13.763	13.770	13.626	13.519	13.758
xpat(3285) [511]	13.999	14.222	14.350	14.103	14.110
xpat(3290) [516]	14.112	14.116	13.889	13.748	13.873
xpat(3295) [521]	13.991	13.870	13.869	14.100	14.444
xpat(3300) [526]	14.569	14.461	14.241	13.886	13.314
xpat(3305) [531]	12.841	12.720	12.742	12.741	12.746

xpat(3310) [536]	12.622	12.619	12.613	12.500	12.539
xpat(3315) [541]	12.514	12.513	12.394	12.291	12.059
xpat(3320) [546]	11.739	11.421	11.380	11.370	11.475
xpat(3325) [551]	11.708	11.605	11.365	11.252	11.281
xpat(3330) [556]	11.283	11.381	11.463	12.046	13.082
xpat(3335) [561]	13.896	13.670	12.492	11.342	10.763
xpat(3340) [566]	10.772	11.006	11.586	12.282	12.164
xpat(3345) [571]	11.577	10.988	10.663	10.894	11.243
xpat(3350) [576]	11.325	11.224	10.871	10.642	10.644
xpat(3355) [581]	10.414	10.399	11.226	12.508	12.518
xpat(3360) [586]	11.141	9.735	8.685	7.759	7.057
xpat(3365) [591]	6.598	6.472	6.590	6.604	6.352
xpat(3370) [596]	6.349	6.371	6.267	6.267	6.274
xpat(3375) [601]	6.268	6.250	6.247	6.146	6.133
xpat(3380) [606]	6.142	6.024	5.910	6.264	6.140
xpat(3385) [611]	5.088	3.362	1.747	0.841	0.486
xpat(3390) [616]	0.251	0.256	0.265	0.252	0.372
xpat(3395) [621]	0.274	0.145	0.147	0.161	0.266
xpat(3400) [626]	0.263	0.268	0.277	0.279	0.037
xpat(3405) [631]	0.160	0.074	0.063	0.058	0.271
xpat(3410) [636]	0.266	0.149	0.061	0.060	0.039
xpat(3415) [641]	0.046	0.054	0.061	0.166	0.044
xpat(3420) [646]	0.061	0.063	0.060	0.060	0.059
xpat(3425) [651]	0.177	0.194	0.186	0.067	0.079
xpat(3430) [656]	0.096	-0.048	-0.041	0.102	0.102

ES8-26: CERES viewing zenith at TOA

xpat(3435) [1]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3440) [6]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3445) [11]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3450) [16]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3455) [21]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3460) [26]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3465) [31]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3470) [36]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3475) [41]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3480) [46]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3485) [51]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3490) [56]	32767.000	32767.000	79.776	78.533	77.379
xpat(3495) [61]	76.292	75.258	74.264	73.305	72.383
xpat(3500) [66]	71.469	70.585	69.725	68.867	68.038
xpat(3505) [71]	67.214	66.401	65.598	64.804	64.019
xpat(3510) [76]	63.241	62.471	61.706	60.948	60.194
xpat(3515) [81]	59.446	58.703	57.964	57.235	56.497
xpat(3520) [86]	55.769	55.051	54.329	53.611	52.895
xpat(3525) [91]	52.181	51.471	50.762	50.056	49.351
xpat(3530) [96]	48.649	47.948	47.255	46.552	45.856
xpat(3535) [101]	45.162	44.470	43.784	43.094	42.406
xpat(3540) [106]	41.718	41.031	40.346	39.662	38.978
xpat(3545) [111]	38.296	37.615	36.934	36.254	35.575
xpat(3550) [116]	34.897	34.219	33.543	32.867	32.197
xpat(3555) [121]	31.516	30.848	30.174	29.501	28.829
xpat(3560) [126]	28.157	27.485	26.814	26.143	25.473
xpat(3565) [131]	24.803	24.134	23.470	22.796	22.128
xpat(3570) [136]	21.465	20.792	20.130	19.463	18.797
xpat(3575) [141]	18.130	17.464	16.798	16.132	15.467
xpat(3580) [146]	14.802	14.137	13.472	12.807	12.142
xpat(3585) [151]	11.478	10.814	10.150	9.486	8.828
xpat(3590) [156]	8.158	7.500	6.837	6.173	5.510
xpat(3595) [161]	4.847	4.183	3.520	2.857	2.194
xpat(3600) [166]	1.531	0.868	0.205	0.458	1.121
xpat(3605) [171]	1.779	2.447	3.111	3.768	4.431
xpat(3610) [176]	5.094	5.758	6.421	7.085	7.748
xpat(3615) [181]	8.412	9.076	9.739	10.404	11.062
xpat(3620) [186]	11.732	12.396	13.061	13.726	14.385
xpat(3625) [191]	15.056	15.722	16.381	17.053	17.713
xpat(3630) [196]	18.380	19.046	19.713	20.381	21.048
xpat(3635) [201]	21.710	22.384	23.052	23.716	24.391
xpat(3640) [206]	25.060	25.724	26.401	27.066	27.737
xpat(3645) [211]	28.409	29.081	29.754	30.427	31.101
xpat(3650) [216]	31.775	32.451	33.126	33.803	34.480
xpat(3655) [221]	35.158	35.836	36.509	37.196	37.876
xpat(3660) [226]	38.558	39.241	39.919	40.604	41.290
xpat(3665) [231]	41.976	42.665	43.354	44.044	44.736
xpat(3670) [236]	45.430	46.124	46.821	47.512	48.218
xpat(3675) [241]	48.919	49.616	50.328	51.029	51.738
xpat(3680) [246]	52.450	53.164	53.881	54.601	55.324
xpat(3685) [251]	56.050	56.779	57.512	58.249	58.990
xpat(3690) [256]	59.728	60.485	61.234	62.001	62.768
xpat(3695) [261]	63.535	64.323	65.104	65.902	66.708
xpat(3700) [266]	67.526	68.355	69.197	70.054	70.928

xpat(3705) [271]	71.821	72.728	73.678	74.650	75.651
xpat(3710) [276]	76.715	77.817	79.004	80.304	32767.000
xpat(3715) [281]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3720) [286]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3725) [291]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3730) [296]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3735) [301]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3740) [306]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3745) [311]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3750) [316]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3755) [321]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3760) [326]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3765) [331]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3770) [336]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3775) [341]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3780) [346]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3785) [351]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3790) [356]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3795) [361]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3800) [366]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3805) [371]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3810) [376]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3815) [381]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(3820) [386]	32767.000	32767.000	79.772	78.538	77.383
xpat(3825) [391]	76.286	75.259	74.256	73.305	72.374
xpat(3830) [396]	71.468	70.583	69.716	68.865	68.028
xpat(3835) [401]	67.204	66.391	65.595	64.794	64.015
xpat(3840) [406]	63.238	62.460	61.702	60.943	60.184
xpat(3845) [411]	59.442	58.698	57.959	57.224	56.486
xpat(3850) [416]	55.764	55.040	54.318	53.600	52.884
xpat(3855) [421]	52.170	51.466	50.751	50.044	49.346
xpat(3860) [426]	48.638	47.943	47.244	46.547	45.851
xpat(3865) [431]	45.157	44.465	43.773	43.083	42.395
xpat(3870) [436]	41.707	41.021	40.341	39.657	38.968
xpat(3875) [441]	38.291	37.604	36.923	36.249	35.564
xpat(3880) [446]	34.892	34.215	33.538	32.862	32.186
xpat(3885) [451]	31.511	30.837	30.163	29.490	28.818
xpat(3890) [456]	28.146	27.480	26.809	26.132	25.468
xpat(3895) [461]	24.792	24.129	23.460	22.785	22.123
xpat(3900) [466]	21.455	20.787	20.120	19.452	18.786
xpat(3905) [471]	18.119	17.453	16.787	16.127	15.456
xpat(3910) [476]	14.796	14.131	13.460	12.801	12.131
xpat(3915) [481]	11.472	10.808	10.144	9.480	8.816
xpat(3920) [486]	8.152	7.488	6.825	6.161	5.498
xpat(3925) [491]	4.834	4.171	3.514	2.845	2.187
xpat(3930) [496]	1.518	0.855	0.198	0.465	1.128
xpat(3935) [501]	1.791	2.454	3.118	3.781	4.444
xpat(3940) [506]	5.107	5.771	6.434	7.092	7.755
xpat(3945) [511]	8.419	9.083	9.753	10.411	11.075
xpat(3950) [516]	11.739	12.404	13.068	13.733	14.398
xpat(3955) [521]	15.063	15.729	16.394	17.060	17.726
xpat(3960) [526]	18.393	19.059	19.720	20.393	21.055
xpat(3965) [531]	21.723	22.397	23.059	23.728	24.397
xpat(3970) [536]	25.067	25.737	26.407	27.078	27.749
xpat(3975) [541]	28.421	29.093	29.766	30.434	31.107
xpat(3980) [546]	31.788	32.457	33.133	33.809	34.486
xpat(3985) [551]	35.170	35.842	36.522	37.202	37.883
xpat(3990) [556]	38.565	39.247	39.931	40.616	41.302
xpat(3995) [561]	41.989	42.677	43.360	44.050	44.748
xpat(4000) [566]	45.436	46.136	46.826	47.524	48.224
xpat(4005) [571]	48.925	49.628	50.334	51.041	51.750
xpat(4010) [576]	52.462	53.177	53.894	54.613	55.330
xpat(4015) [581]	56.056	56.785	57.518	58.255	58.996
xpat(4020) [586]	59.741	60.491	61.246	62.007	62.774
xpat(4025) [591]	63.547	64.328	65.116	65.913	66.720
xpat(4030) [596]	67.530	68.366	69.207	70.057	70.938
xpat(4035) [601]	71.823	72.738	73.679	74.650	75.659
xpat(4040) [606]	76.712	77.823	79.009	80.296	32767.000
xpat(4045) [611]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4050) [616]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4055) [621]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4060) [626]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4065) [631]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4070) [636]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4075) [641]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4080) [646]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4085) [651]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4090) [656]	32767.000	32767.000	32767.000	32767.000	32767.000

ES8-27: CERES solar zenith at TOA

xpat(4095) [1]	32767.000	32767.000	32767.000	32767.000	32767.000
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xpat(4100) [6]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4105) [11]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4110) [16]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4115) [21]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4120) [26]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4125) [31]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4130) [36]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4135) [41]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4140) [46]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4145) [51]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4150) [56]	32767.000	32767.000	69.432	68.836	68.327	68.327
xpat(4155) [61]	67.883	67.490	67.138	66.819	66.530	66.530
xpat(4160) [66]	66.261	66.014	65.787	65.572	65.374	65.374
xpat(4165) [71]	65.187	65.010	64.844	64.686	64.536	64.536
xpat(4170) [76]	64.394	64.259	64.129	64.006	63.888	63.888
xpat(4175) [81]	63.774	63.665	63.561	63.461	63.363	63.363
xpat(4180) [86]	63.269	63.180	63.092	63.007	62.925	62.925
xpat(4185) [91]	62.846	62.769	62.694	62.621	62.550	62.550
xpat(4190) [96]	62.482	62.414	62.350	62.285	62.223	62.223
xpat(4195) [101]	62.162	62.103	62.045	61.989	61.933	61.933
xpat(4200) [106]	61.879	61.825	61.773	61.722	61.671	61.671
xpat(4205) [111]	61.622	61.574	61.526	61.479	61.433	61.433
xpat(4210) [116]	61.388	61.343	61.299	61.256	61.214	61.214
xpat(4215) [121]	61.171	61.130	61.089	61.049	61.009	61.009
xpat(4220) [126]	60.970	60.931	60.893	60.855	60.817	60.817
xpat(4225) [131]	60.780	60.743	60.707	60.671	60.635	60.635
xpat(4230) [136]	60.600	60.565	60.530	60.496	60.462	60.462
xpat(4235) [141]	60.428	60.394	60.361	60.328	60.295	60.295
xpat(4240) [146]	60.262	60.229	60.197	60.165	60.133	60.133
xpat(4245) [151]	60.101	60.069	60.037	60.006	59.975	59.975
xpat(4250) [156]	59.943	59.912	59.881	59.850	59.819	59.819
xpat(4255) [161]	59.788	59.758	59.727	59.696	59.665	59.665
xpat(4260) [166]	59.635	59.604	59.574	59.543	59.512	59.512
xpat(4265) [171]	59.482	59.451	59.420	59.390	59.359	59.359
xpat(4270) [176]	59.328	59.298	59.267	59.236	59.204	59.204
xpat(4275) [181]	59.173	59.142	59.111	59.079	59.048	59.048
xpat(4280) [186]	59.016	58.984	58.951	58.919	58.887	58.887
xpat(4285) [191]	58.854	58.821	58.788	58.755	58.722	58.722
xpat(4290) [196]	58.688	58.654	58.620	58.585	58.550	58.550
xpat(4295) [201]	58.516	58.480	58.444	58.408	58.371	58.371
xpat(4300) [206]	58.334	58.298	58.260	58.222	58.183	58.183
xpat(4305) [211]	58.144	58.105	58.065	58.024	57.983	57.983
xpat(4310) [216]	57.942	57.900	57.857	57.813	57.769	57.769
xpat(4315) [221]	57.724	57.679	57.633	57.586	57.538	57.538
xpat(4320) [226]	57.489	57.439	57.389	57.338	57.285	57.285
xpat(4325) [231]	57.231	57.177	57.121	57.064	57.005	57.005
xpat(4330) [236]	56.945	56.884	56.822	56.758	56.691	56.691
xpat(4335) [241]	56.624	56.555	56.483	56.410	56.335	56.335
xpat(4340) [246]	56.257	56.177	56.094	56.009	55.920	55.920
xpat(4345) [251]	55.829	55.734	55.636	55.534	55.428	55.428
xpat(4350) [256]	55.319	55.203	55.085	54.958	54.827	54.827
xpat(4355) [261]	54.691	54.546	54.395	54.235	54.066	54.066
xpat(4360) [266]	53.886	53.695	53.491	53.274	53.039	53.039
xpat(4365) [271]	52.787	52.515	52.213	51.884	51.523	51.523
xpat(4370) [276]	51.112	50.653	50.118	49.480	32767.000	32767.000
xpat(4375) [281]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4380) [286]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4385) [291]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4390) [296]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4395) [301]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4400) [306]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4405) [311]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4410) [316]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4415) [321]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4420) [326]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4425) [331]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4430) [336]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4435) [341]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4440) [346]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4445) [351]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4450) [356]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4455) [361]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4460) [366]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4465) [371]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4470) [376]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4475) [381]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4480) [386]	32767.000	32767.000	49.728	50.314	50.818	50.818
xpat(4485) [391]	51.261	51.648	52.000	52.313	52.602	52.602
xpat(4490) [396]	52.867	53.112	53.339	53.551	53.749	53.749
xpat(4495) [401]	53.935	54.110	54.274	54.432	54.579	54.579
xpat(4500) [406]	54.721	54.856	54.984	55.106	55.225	55.225

xpat(4505) [411]	55.336	55.445	55.549	55.649	55.746
xpat(4510) [416]	55.838	55.928	56.015	56.099	56.180
xpat(4515) [421]	56.259	56.335	56.410	56.482	56.552
xpat(4520) [426]	56.621	56.687	56.752	56.815	56.877
xpat(4525) [431]	56.937	56.996	57.054	57.110	57.166
xpat(4530) [436]	57.220	57.272	57.324	57.375	57.425
xpat(4535) [441]	57.474	57.522	57.569	57.615	57.661
xpat(4540) [446]	57.706	57.750	57.794	57.837	57.879
xpat(4545) [451]	57.921	57.962	58.002	58.042	58.082
xpat(4550) [456]	58.121	58.159	58.197	58.235	58.272
xpat(4555) [461]	58.309	58.345	58.381	58.417	58.452
xpat(4560) [466]	58.487	58.522	58.556	58.590	58.624
xpat(4565) [471]	58.658	58.691	58.724	58.757	58.790
xpat(4570) [476]	58.822	58.854	58.886	58.918	58.950
xpat(4575) [481]	58.981	59.013	59.044	59.075	59.106
xpat(4580) [486]	59.137	59.168	59.199	59.230	59.260
xpat(4585) [491]	59.291	59.321	59.352	59.382	59.412
xpat(4590) [496]	59.443	59.473	59.503	59.534	59.564
xpat(4595) [501]	59.594	59.625	59.655	59.685	59.716
xpat(4600) [506]	59.746	59.777	59.808	59.838	59.869
xpat(4605) [511]	59.900	59.931	59.962	59.993	60.025
xpat(4610) [516]	60.056	60.088	60.120	60.152	60.184
xpat(4615) [521]	60.216	60.249	60.282	60.315	60.348
xpat(4620) [526]	60.381	60.415	60.449	60.483	60.518
xpat(4625) [531]	60.552	60.588	60.623	60.659	60.695
xpat(4630) [536]	60.732	60.769	60.806	60.844	60.882
xpat(4635) [541]	60.921	60.960	61.000	61.040	61.081
xpat(4640) [546]	61.123	61.164	61.207	61.250	61.294
xpat(4645) [551]	61.339	61.384	61.430	61.477	61.524
xpat(4650) [556]	61.573	61.622	61.673	61.724	61.777
xpat(4655) [561]	61.830	61.885	61.940	61.997	62.056
xpat(4660) [566]	62.115	62.177	62.239	62.303	62.369
xpat(4665) [571]	62.436	62.505	62.577	62.650	62.726
xpat(4670) [576]	62.803	62.884	62.966	63.052	63.140
xpat(4675) [581]	63.231	63.326	63.424	63.526	63.632
xpat(4680) [586]	63.743	63.858	63.978	64.103	64.235
xpat(4685) [591]	64.372	64.517	64.670	64.831	65.001
xpat(4690) [596]	65.180	65.373	65.578	65.795	66.033
xpat(4695) [601]	66.285	66.561	66.862	67.193	67.560
xpat(4700) [606]	67.972	68.439	68.979	69.619	32767.000
xpat(4705) [611]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4710) [616]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4715) [621]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4720) [626]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4725) [631]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4730) [636]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4735) [641]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4740) [646]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4745) [651]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4750) [656]	32767.000	32767.000	32767.000	32767.000	32767.000

ES8-28: CERES relative azimuth at TOA

xpat(4755) [1]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4760) [6]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4765) [11]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4770) [16]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4775) [21]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4780) [26]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4785) [31]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4790) [36]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4795) [41]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4800) [46]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4805) [51]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(4810) [56]	32767.000	32767.000	192.858	192.909	192.955
xpat(4815) [61]	192.995	193.032	193.066	193.097	193.126
xpat(4820) [66]	193.153	193.178	193.202	193.224	193.245
xpat(4825) [71]	193.265	193.284	193.302	193.319	193.336
xpat(4830) [76]	193.351	193.366	193.381	193.395	193.408
xpat(4835) [81]	193.421	193.434	193.446	193.457	193.468
xpat(4840) [86]	193.479	193.490	193.500	193.510	193.520
xpat(4845) [91]	193.529	193.538	193.547	193.556	193.564
xpat(4850) [96]	193.572	193.580	193.588	193.596	193.603
xpat(4855) [101]	193.611	193.618	193.625	193.632	193.638
xpat(4860) [106]	193.645	193.652	193.658	193.664	193.670
xpat(4865) [111]	193.676	193.682	193.688	193.694	193.700
xpat(4870) [116]	193.705	193.711	193.716	193.722	193.727
xpat(4875) [121]	193.732	193.737	193.742	193.747	193.752
xpat(4880) [126]	193.757	193.762	193.767	193.772	193.776
xpat(4885) [131]	193.781	193.786	193.790	193.795	193.799
xpat(4890) [136]	193.804	193.808	193.813	193.817	193.821
xpat(4895) [141]	193.825	193.830	193.834	193.838	193.842

xpat(4900) [146]	193.846	193.850	193.854	193.858	193.862
xpat(4905) [151]	193.865	193.869	193.873	193.876	193.880
xpat(4910) [156]	193.883	193.887	193.890	193.893	193.895
xpat(4915) [161]	193.897	193.899	193.900	193.899	193.895
xpat(4920) [166]	193.884	193.850	193.570	14.112	14.018
xpat(4925) [171]	13.997	13.989	13.987	13.987	13.988
xpat(4930) [176]	13.990	13.992	13.995	13.998	14.001
xpat(4935) [181]	14.005	14.008	14.012	14.016	14.020
xpat(4940) [186]	14.024	14.028	14.032	14.036	14.041
xpat(4945) [191]	14.045	14.049	14.054	14.058	14.062
xpat(4950) [196]	14.067	14.072	14.076	14.081	14.086
xpat(4955) [201]	14.091	14.096	14.101	14.106	14.111
xpat(4960) [206]	14.116	14.121	14.127	14.132	14.138
xpat(4965) [211]	14.143	14.149	14.155	14.161	14.167
xpat(4970) [216]	14.173	14.179	14.185	14.192	14.198
xpat(4975) [221]	14.205	14.212	14.219	14.226	14.233
xpat(4980) [226]	14.241	14.248	14.256	14.264	14.272
xpat(4985) [231]	14.280	14.289	14.298	14.307	14.316
xpat(4990) [236]	14.325	14.335	14.345	14.355	14.366
xpat(4995) [241]	14.377	14.388	14.400	14.412	14.424
xpat(5000) [246]	14.437	14.450	14.464	14.478	14.493
xpat(5005) [251]	14.509	14.525	14.542	14.560	14.578
xpat(5010) [256]	14.597	14.618	14.639	14.662	14.685
xpat(5015) [261]	14.710	14.737	14.765	14.794	14.826
xpat(5020) [266]	14.860	14.897	14.937	14.979	15.026
xpat(5025) [271]	15.077	15.132	15.195	15.264	15.342
xpat(5030) [276]	15.432	15.535	15.658	15.810	32767.000
xpat(5035) [281]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5040) [286]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5045) [291]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5050) [296]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5055) [301]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5060) [306]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5065) [311]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5070) [316]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5075) [321]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5080) [326]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5085) [331]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5090) [336]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5095) [341]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5100) [346]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5105) [351]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5110) [356]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5115) [361]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5120) [366]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5125) [371]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5130) [376]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5135) [381]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5140) [386]	32767.000	32767.000	15.699	15.562	15.446
xpat(5145) [391]	15.347	15.262	15.187	15.120	15.060
xpat(5150) [396]	15.005	14.956	14.910	14.868	14.829
xpat(5155) [401]	14.792	14.758	14.727	14.697	14.669
xpat(5160) [406]	14.642	14.617	14.593	14.570	14.548
xpat(5165) [411]	14.528	14.508	14.489	14.471	14.454
xpat(5170) [416]	14.437	14.421	14.406	14.391	14.376
xpat(5175) [421]	14.362	14.349	14.336	14.323	14.311
xpat(5180) [426]	14.299	14.288	14.277	14.266	14.255
xpat(5185) [431]	14.245	14.235	14.225	14.215	14.206
xpat(5190) [436]	14.197	14.188	14.179	14.170	14.162
xpat(5195) [441]	14.154	14.146	14.138	14.130	14.122
xpat(5200) [446]	14.115	14.107	14.100	14.093	14.086
xpat(5205) [451]	14.079	14.072	14.066	14.059	14.053
xpat(5210) [456]	14.046	14.040	14.034	14.028	14.022
xpat(5215) [461]	14.016	14.010	14.004	13.998	13.993
xpat(5220) [466]	13.987	13.982	13.976	13.971	13.965
xpat(5225) [471]	13.960	13.955	13.950	13.945	13.940
xpat(5230) [476]	13.935	13.930	13.925	13.920	13.916
xpat(5235) [481]	13.911	13.907	13.902	13.898	13.894
xpat(5240) [486]	13.890	13.886	13.883	13.879	13.876
xpat(5245) [491]	13.873	13.872	13.871	13.872	13.877
xpat(5250) [496]	13.891	13.934	14.289	193.616	193.728
xpat(5255) [501]	193.754	193.763	193.767	193.767	193.766
xpat(5260) [506]	193.764	193.761	193.758	193.755	193.751
xpat(5265) [511]	193.747	193.743	193.739	193.735	193.730
xpat(5270) [516]	193.726	193.721	193.717	193.712	193.708
xpat(5275) [521]	193.703	193.698	193.694	193.689	193.684
xpat(5280) [526]	193.679	193.674	193.669	193.664	193.659
xpat(5285) [531]	193.654	193.649	193.644	193.639	193.634
xpat(5290) [536]	193.628	193.623	193.617	193.612	193.607
xpat(5295) [541]	193.601	193.595	193.590	193.584	193.578
xpat(5300) [546]	193.572	193.566	193.560	193.554	193.548

xpat(5305) [551]	193.542	193.536	193.529	193.523	193.516
xpat(5310) [556]	193.509	193.503	193.496	193.489	193.482
xpat(5315) [561]	193.474	193.467	193.460	193.452	193.444
xpat(5320) [566]	193.436	193.428	193.420	193.412	193.403
xpat(5325) [571]	193.394	193.385	193.376	193.367	193.357
xpat(5330) [576]	193.347	193.337	193.327	193.316	193.305
xpat(5335) [581]	193.294	193.282	193.270	193.258	193.245
xpat(5340) [586]	193.232	193.218	193.204	193.189	193.174
xpat(5345) [591]	193.158	193.142	193.124	193.106	193.088
xpat(5350) [596]	193.068	193.047	193.025	193.002	192.977
xpat(5355) [601]	192.951	192.923	192.893	192.860	192.825
xpat(5360) [606]	192.786	192.744	192.696	192.641	32767.000
xpat(5365) [611]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5370) [616]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5375) [621]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5380) [626]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5385) [631]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5390) [636]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5395) [641]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5400) [646]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5405) [651]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5410) [656]	32767.000	32767.000	32767.000	32767.000	32767.000

ES8-29: CERES SW unfiltered radiance

xpat(5415) [1]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5420) [6]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5425) [11]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5430) [16]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5435) [21]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5440) [26]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5445) [31]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5450) [36]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5455) [41]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5460) [46]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5465) [51]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5470) [56]	32767.000	32767.000	100.385	93.989	88.607
xpat(5475) [61]	85.241	85.917	87.381	85.745	83.650
xpat(5480) [66]	86.270	92.417	98.907	103.554	103.425
xpat(5485) [71]	103.269	105.198	106.303	102.775	97.304
xpat(5490) [76]	90.332	81.772	74.031	64.539	54.752
xpat(5495) [81]	49.753	46.129	45.484	47.122	49.932
xpat(5500) [86]	51.745	50.598	47.516	45.215	51.641
xpat(5505) [91]	69.508	92.137	99.720	93.478	86.631
xpat(5510) [96]	84.053	89.048	98.549	106.250	110.113
xpat(5515) [101]	112.840	114.207	116.932	121.559	125.054
xpat(5520) [106]	125.214	123.620	122.194	120.913	118.195
xpat(5525) [111]	114.703	112.325	113.435	118.718	124.786
xpat(5530) [116]	123.359	112.366	97.842	86.075	78.953
xpat(5535) [121]	77.623	79.896	82.675	86.522	91.391
xpat(5540) [126]	95.693	96.054	90.013	77.668	66.188
xpat(5545) [131]	64.567	65.200	60.684	51.127	43.477
xpat(5550) [136]	42.807	52.611	72.525	87.028	95.335
xpat(5555) [141]	97.902	91.199	89.273	99.820	117.220
xpat(5560) [146]	133.798	141.129	132.989	116.387	107.012
xpat(5565) [151]	104.608	101.551	93.248	82.888	82.151
xpat(5570) [156]	88.439	96.277	96.148	87.322	78.096
xpat(5575) [161]	70.908	71.248	75.984	77.928	73.185
xpat(5580) [166]	59.614	44.099	37.176	37.040	44.149
xpat(5585) [171]	57.671	69.860	72.939	65.798	61.729
xpat(5590) [176]	69.694	83.439	98.200	104.472	103.372
xpat(5595) [181]	111.697	135.204	147.053	118.585	70.898
xpat(5600) [186]	38.486	24.241	19.361	17.859	19.219
xpat(5605) [191]	22.736	25.725	25.917	23.888	25.379
xpat(5610) [196]	33.590	44.292	48.414	48.226	45.437
xpat(5615) [201]	36.953	27.760	22.887	21.374	21.204
xpat(5620) [206]	21.374	21.738	22.418	22.919	23.268
xpat(5625) [211]	23.778	24.596	25.396	25.718	26.902
xpat(5630) [216]	28.398	30.044	31.511	33.015	33.822
xpat(5635) [221]	34.306	34.636	34.643	34.679	35.511
xpat(5640) [226]	39.812	49.054	64.236	89.861	123.748
xpat(5645) [231]	153.372	174.217	182.392	186.712	191.488
xpat(5650) [236]	186.464	171.102	157.653	153.635	162.111
xpat(5655) [241]	173.164	177.470	178.909	184.850	192.351
xpat(5660) [246]	193.016	184.682	163.867	138.432	130.739
xpat(5665) [251]	142.741	159.860	174.418	181.308	174.923
xpat(5670) [256]	167.560	174.833	192.451	203.811	207.004
xpat(5675) [261]	212.171	215.225	208.504	201.758	206.529
xpat(5680) [266]	215.357	216.182	210.255	210.732	219.560
xpat(5685) [271]	223.248	225.316	233.140	243.869	248.528
xpat(5690) [276]	247.897	239.888	219.079	197.070	32767.000
xpat(5695) [281]	32767.000	32767.000	32767.000	32767.000	32767.000

xpat(5700) [286]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5705) [291]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5710) [296]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5715) [301]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5720) [306]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5725) [311]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5730) [316]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5735) [321]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5740) [326]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5745) [331]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5750) [336]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5755) [341]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5760) [346]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5765) [351]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5770) [356]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5775) [361]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5780) [366]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5785) [371]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5790) [376]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5795) [381]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(5800) [386]	32767.000	32767.000	195.346	220.253	234.520	32767.000
xpat(5805) [391]	241.714	242.034	235.480	231.319	233.088	32767.000
xpat(5810) [396]	227.663	215.035	211.177	215.829	218.068	32767.000
xpat(5815) [401]	212.758	205.678	206.193	213.231	214.843	32767.000
xpat(5820) [406]	211.949	213.264	211.340	195.486	174.660	32767.000
xpat(5825) [411]	169.156	176.669	180.988	179.541	174.919	32767.000
xpat(5830) [416]	167.730	160.353	156.336	160.353	172.362	32767.000
xpat(5835) [421]	186.142	191.112	188.875	187.749	187.905	32767.000
xpat(5840) [426]	185.529	180.417	178.987	190.680	200.916	32767.000
xpat(5845) [431]	187.807	169.729	174.377	182.865	172.289	32767.000
xpat(5850) [436]	157.442	147.855	142.264	133.776	121.145	32767.000
xpat(5855) [441]	112.045	105.998	90.489	66.369	45.909	32767.000
xpat(5860) [446]	37.324	45.217	57.633	58.155	48.248	32767.000
xpat(5865) [451]	33.883	26.948	26.148	25.992	24.661	32767.000
xpat(5870) [456]	23.322	22.842	22.166	22.140	21.969	32767.000
xpat(5875) [461]	21.624	21.111	20.798	20.311	19.823	32767.000
xpat(5880) [466]	19.471	19.318	19.172	19.176	18.827	32767.000
xpat(5885) [471]	18.510	18.346	18.703	19.884	20.695	32767.000
xpat(5890) [476]	19.695	18.684	18.324	18.524	19.200	32767.000
xpat(5895) [481]	19.884	20.742	23.269	29.091	39.444	32767.000
xpat(5900) [486]	59.672	92.175	120.663	134.436	139.940	32767.000
xpat(5905) [491]	133.528	115.260	106.295	115.897	127.395	32767.000
xpat(5910) [496]	134.262	141.320	147.565	149.710	152.254	32767.000
xpat(5915) [501]	152.922	146.390	141.740	143.358	146.546	32767.000
xpat(5920) [506]	145.585	140.466	133.429	128.163	122.720	32767.000
xpat(5925) [511]	118.714	124.756	139.773	148.724	139.515	32767.000
xpat(5930) [516]	123.423	117.497	118.641	113.843	103.004	32767.000
xpat(5935) [521]	93.303	91.388	92.182	88.501	82.908	32767.000
xpat(5940) [526]	83.715	97.268	130.808	166.389	179.639	32767.000
xpat(5945) [531]	170.375	156.181	150.140	151.070	149.467	32767.000
xpat(5950) [536]	138.805	123.827	113.432	108.644	104.622	32767.000
xpat(5955) [541]	100.157	98.738	97.628	99.433	110.288	32767.000
xpat(5960) [546]	121.805	125.498	123.429	119.740	113.824	32767.000
xpat(5965) [551]	105.823	101.644	103.546	106.937	108.249	32767.000
xpat(5970) [556]	107.434	106.656	107.576	108.197	108.363	32767.000
xpat(5975) [561]	111.234	117.791	131.676	141.878	138.871	32767.000
xpat(5980) [566]	130.488	119.167	104.303	94.837	92.183	32767.000
xpat(5985) [571]	87.334	82.036	77.813	74.440	73.495	32767.000
xpat(5990) [576]	75.252	78.480	82.363	83.019	80.455	32767.000
xpat(5995) [581]	79.306	78.975	75.251	70.568	72.328	32767.000
xpat(6000) [586]	80.106	89.037	97.297	106.102	112.317	32767.000
xpat(6005) [591]	114.861	115.018	113.127	113.297	116.307	32767.000
xpat(6010) [596]	117.103	116.484	117.290	117.589	114.238	32767.000
xpat(6015) [601]	111.207	111.854	114.235	114.850	113.112	32767.000
xpat(6020) [606]	111.214	111.561	111.895	110.897	32767.000	32767.000
xpat(6025) [611]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6030) [616]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6035) [621]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6040) [626]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6045) [631]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6050) [636]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6055) [641]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6060) [646]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6065) [651]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6070) [656]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000

ES8-30: CERES LW unfiltered radiance

xpat(6075) [1]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6080) [6]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6085) [11]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6090) [16]	32767.000	32767.000	32767.000	32767.000	32767.000	32767.000

xpat(6500)	[426]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6505)	[431]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6510)	[436]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6515)	[441]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6520)	[446]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6525)	[451]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6530)	[456]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6535)	[461]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6540)	[466]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6545)	[471]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6550)	[476]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6555)	[481]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6560)	[486]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6565)	[491]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6570)	[496]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6575)	[501]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6580)	[506]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6585)	[511]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6590)	[516]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6595)	[521]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6600)	[526]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6605)	[531]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6610)	[536]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6615)	[541]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6620)	[546]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6625)	[551]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6630)	[556]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6635)	[561]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6640)	[566]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6645)	[571]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6650)	[576]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6655)	[581]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6660)	[586]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6665)	[591]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6670)	[596]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6675)	[601]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6680)	[606]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6685)	[611]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6690)	[616]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6695)	[621]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6700)	[626]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6705)	[631]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6710)	[636]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6715)	[641]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6720)	[646]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6725)	[651]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6730)	[656]	32767.000	32767.000	32767.000	32767.000	32767.000

ES8-31: CERES WN unfiltered radiance

xpat(6735)	[1]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6740)	[6]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6745)	[11]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6750)	[16]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6755)	[21]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6760)	[26]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6765)	[31]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6770)	[36]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6775)	[41]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6780)	[46]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6785)	[51]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(6790)	[56]	32767.000	32767.000	13.231	13.430	13.586
xpat(6795)	[61]	13.754	13.576	13.414	13.778	14.643
xpat(6800)	[66]	14.481	13.309	12.273	12.098	11.928
xpat(6805)	[71]	11.984	11.745	12.446	13.983	15.551
xpat(6810)	[76]	17.101	18.520	19.235	20.786	22.517
xpat(6815)	[81]	23.723	24.265	24.437	24.478	24.613
xpat(6820)	[86]	25.008	25.715	26.076	26.079	25.208
xpat(6825)	[91]	23.503	21.762	21.106	21.242	21.409
xpat(6830)	[96]	21.408	21.434	20.585	18.692	16.969
xpat(6835)	[101]	15.945	15.426	15.236	15.243	15.034
xpat(6840)	[106]	15.053	15.275	15.587	15.934	16.470
xpat(6845)	[111]	16.828	16.800	16.445	16.100	15.767
xpat(6850)	[116]	16.091	16.827	17.853	19.076	19.796
xpat(6855)	[121]	19.969	19.591	19.247	19.114	19.111
xpat(6860)	[126]	19.159	18.973	19.464	21.013	22.413
xpat(6865)	[131]	22.443	22.068	22.592	23.811	25.186
xpat(6870)	[136]	25.713	25.221	24.163	23.505	23.126
xpat(6875)	[141]	22.944	22.615	21.424	19.882	18.672
xpat(6880)	[146]	18.297	18.289	18.639	19.326	19.703
xpat(6885)	[151]	20.050	20.574	21.268	21.955	22.140
xpat(6890)	[156]	21.617	20.913	21.094	21.649	22.004

xpat(6895) [161]	22.162	21.810	21.461	21.657	22.328
xpat(6900) [166]	23.558	24.943	25.627	25.271	24.450
xpat(6905) [171]	23.403	22.863	23.024	23.714	24.054
xpat(6910) [176]	23.732	23.440	23.431	23.423	23.249
xpat(6915) [181]	22.896	22.888	23.586	25.312	27.365
xpat(6920) [186]	29.095	29.784	30.327	30.337	30.167
xpat(6925) [191]	29.630	29.327	29.493	29.654	29.657
xpat(6930) [196]	28.958	28.090	27.577	27.557	28.057
xpat(6935) [201]	28.947	29.825	30.703	30.895	30.887
xpat(6940) [206]	31.037	31.032	31.058	31.049	30.890
xpat(6945) [211]	31.051	31.070	31.039	30.865	30.676
xpat(6950) [216]	30.679	30.516	30.662	30.687	30.698
xpat(6955) [221]	30.535	30.349	30.349	30.321	29.827
xpat(6960) [226]	29.113	28.090	26.034	23.435	20.857
xpat(6965) [231]	18.748	17.716	17.383	16.861	16.667
xpat(6970) [236]	17.380	19.147	20.362	20.852	20.855
xpat(6975) [241]	20.843	21.212	21.245	21.225	21.277
xpat(6980) [246]	21.602	22.318	23.488	24.696	25.416
xpat(6985) [251]	25.064	24.387	24.020	24.193	24.555
xpat(6990) [256]	24.539	24.483	24.682	24.820	25.023
xpat(6995) [261]	25.021	24.689	23.630	21.877	19.613
xpat(7000) [266]	18.068	17.381	16.002	13.590	12.049
xpat(7005) [271]	11.822	12.507	14.137	16.193	17.390
xpat(7010) [276]	16.885	16.206	17.949	20.327	32767.000
xpat(7015) [281]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7020) [286]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7025) [291]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7030) [296]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7035) [301]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7040) [306]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7045) [311]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7050) [316]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7055) [321]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7060) [326]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7065) [331]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7070) [336]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7075) [341]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7080) [346]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7085) [351]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7090) [356]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7095) [361]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7100) [366]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7105) [371]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7110) [376]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7115) [381]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7120) [386]	32767.000	32767.000	18.938	16.692	16.548
xpat(7125) [391]	17.376	16.535	14.640	12.729	11.361
xpat(7130) [396]	11.010	12.572	14.458	15.508	15.850
xpat(7135) [401]	16.731	18.794	21.227	23.151	24.186
xpat(7140) [406]	24.581	24.554	24.380	24.021	24.077
xpat(7145) [411]	24.274	24.085	23.752	23.600	23.761
xpat(7150) [416]	23.919	24.085	24.412	24.083	23.017
xpat(7155) [421]	21.823	21.342	21.349	21.348	21.317
xpat(7160) [426]	21.120	20.953	20.431	18.886	16.819
xpat(7165) [431]	16.312	17.196	17.712	17.009	17.004
xpat(7170) [436]	18.405	19.757	20.473	20.669	20.997
xpat(7175) [441]	21.699	22.221	23.277	25.168	27.440
xpat(7180) [446]	28.623	28.068	26.706	26.251	27.439
xpat(7185) [451]	29.184	29.881	30.058	30.441	30.787
xpat(7190) [456]	30.790	30.759	30.596	30.754	30.726
xpat(7195) [461]	30.922	30.951	30.811	30.776	30.779
xpat(7200) [466]	30.963	30.988	31.139	30.972	30.956
xpat(7205) [471]	30.974	30.992	30.969	30.625	30.461
xpat(7210) [476]	30.468	30.467	30.474	30.296	30.291
xpat(7215) [481]	30.287	30.128	29.783	29.081	28.212
xpat(7220) [486]	26.661	25.120	23.733	23.033	22.874
xpat(7225) [491]	22.680	22.698	22.879	22.515	22.148
xpat(7230) [496]	21.992	21.980	21.813	21.472	21.332
xpat(7235) [501]	21.157	20.987	20.978	20.800	20.467
xpat(7240) [506]	20.670	20.680	20.464	20.305	20.663
xpat(7245) [511]	21.025	21.360	21.552	21.181	21.192
xpat(7250) [516]	21.194	21.201	20.860	20.648	20.836
xpat(7255) [521]	21.013	20.831	20.830	21.177	21.693
xpat(7260) [526]	21.871	21.718	21.389	20.855	19.997
xpat(7265) [531]	19.286	19.104	19.137	19.136	19.143
xpat(7270) [536]	18.957	18.952	18.944	18.773	18.833
xpat(7275) [541]	18.794	18.793	18.615	18.458	18.109
xpat(7280) [546]	17.629	17.152	17.091	17.075	17.233
xpat(7285) [551]	17.583	17.428	17.068	16.897	16.942
xpat(7290) [556]	16.945	17.091	17.215	18.091	19.646
xpat(7295) [561]	20.869	20.528	18.760	17.033	16.163

xpat(7300) [566]	16.174	16.524	17.396	18.441	18.249
xpat(7305) [571]	17.369	16.485	15.997	16.343	16.867
xpat(7310) [576]	16.991	16.839	16.310	15.966	15.969
xpat(7315) [581]	15.624	15.601	16.842	18.766	18.780
xpat(7320) [586]	16.715	14.574	13.019	11.630	10.578
xpat(7325) [591]	9.891	9.701	9.878	9.900	9.522
xpat(7330) [596]	9.517	9.550	9.395	9.394	9.405
xpat(7335) [601]	9.396	9.369	9.364	9.213	9.193
xpat(7340) [606]	9.207	9.029	8.859	9.390	32767.000
xpat(7345) [611]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7350) [616]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7355) [621]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7360) [626]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7365) [631]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7370) [636]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7375) [641]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7380) [646]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7385) [651]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7390) [656]	32767.000	32767.000	32767.000	32767.000	32767.000

ES8-32: CERES SW flux at TOA

xpat(7395) [1]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7400) [6]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7405) [11]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7410) [16]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7415) [21]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7420) [26]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7425) [31]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7430) [36]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7435) [41]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7440) [46]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7445) [51]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7450) [56]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7455) [61]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7460) [66]	32767.000	32767.000	282.122	296.831	297.776
xpat(7465) [71]	298.546	305.272	309.641	300.568	286.014
xpat(7470) [76]	237.668	217.313	198.698	174.924	149.844
xpat(7475) [81]	124.614	117.386	117.606	123.796	133.335
xpat(7480) [86]	140.448	139.588	132.933	128.266	148.563
xpat(7485) [91]	209.409	279.705	314.727	295.958	269.108
xpat(7490) [96]	263.120	280.926	315.945	341.708	355.236
xpat(7495) [101]	365.166	370.212	379.527	395.065	406.975
xpat(7500) [106]	408.059	403.439	399.362	395.761	387.451
xpat(7505) [111]	376.583	369.356	373.605	391.641	412.339
xpat(7510) [116]	408.425	373.347	326.239	312.672	287.912
xpat(7515) [121]	284.177	293.634	305.040	320.485	312.214
xpat(7520) [126]	328.032	330.394	310.672	293.412	251.035
xpat(7525) [131]	245.930	249.572	233.425	197.646	200.145
xpat(7530) [136]	198.738	206.396	285.900	307.647	337.594
xpat(7535) [141]	347.284	324.061	317.759	355.904	418.647
xpat(7540) [146]	478.601	505.484	476.957	417.969	384.817
xpat(7545) [151]	376.678	366.168	336.691	299.697	347.100
xpat(7550) [156]	320.664	349.570	349.600	317.964	335.963
xpat(7555) [161]	306.161	308.768	330.519	340.243	320.734
xpat(7560) [166]	262.249	194.735	209.828	209.064	195.638
xpat(7565) [171]	255.340	309.047	322.408	290.620	272.445
xpat(7570) [176]	307.376	304.535	357.938	380.303	375.810
xpat(7575) [181]	405.547	490.257	532.532	428.885	311.095
xpat(7580) [186]	209.513	131.722	105.010	96.688	103.865
xpat(7585) [191]	122.544	137.017	136.441	124.288	130.540
xpat(7590) [196]	170.806	222.684	201.617	199.443	220.920
xpat(7595) [201]	177.726	132.055	107.704	99.522	97.674
xpat(7600) [206]	97.349	97.140	98.292	98.665	98.361
xpat(7605) [211]	98.732	100.349	101.836	101.388	104.293
xpat(7610) [216]	108.292	112.724	116.353	119.996	121.033
xpat(7615) [221]	120.592	118.654	115.756	113.038	113.004
xpat(7620) [226]	123.752	149.013	190.829	271.736	370.432
xpat(7625) [231]	455.837	514.134	534.502	543.386	553.480
xpat(7630) [236]	535.326	487.953	446.640	432.453	453.353
xpat(7635) [241]	481.188	490.085	490.974	504.199	521.491
xpat(7640) [246]	520.173	494.788	436.473	333.675	310.896
xpat(7645) [251]	333.409	411.649	444.763	457.936	437.711
xpat(7650) [256]	415.532	429.727	469.029	492.483	495.911
xpat(7655) [261]	504.061	507.088	487.200	466.659	473.010
xpat(7660) [266]	488.567	485.986	468.557	32767.000	32767.000
xpat(7665) [271]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7670) [276]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7675) [281]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7680) [286]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7685) [291]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7690) [296]	32767.000	32767.000	32767.000	32767.000	32767.000

xpat(7695)	[301]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7700)	[306]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7705)	[311]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7710)	[316]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7715)	[321]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7720)	[326]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7725)	[331]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7730)	[336]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7735)	[341]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7740)	[346]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7745)	[351]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7750)	[356]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7755)	[361]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7760)	[366]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7765)	[371]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7770)	[376]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7775)	[381]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7780)	[386]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7785)	[391]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(7790)	[396]	32767.000	32767.000	468.295	468.295	492.021
xpat(7795)	[401]	484.501	472.906	478.798	499.993	507.838
xpat(7800)	[406]	505.176	512.685	512.452	478.039	430.861
xpat(7805)	[411]	420.988	443.730	458.872	459.612	452.260
xpat(7810)	[416]	438.038	423.122	414.982	428.105	462.865
xpat(7815)	[421]	502.840	519.349	516.432	516.525	520.164
xpat(7820)	[426]	516.872	505.826	505.076	541.607	574.474
xpat(7825)	[431]	540.604	491.899	508.855	537.347	509.843
xpat(7830)	[436]	469.229	443.831	430.134	407.449	371.748
xpat(7835)	[441]	346.386	340.145	294.515	219.111	158.745
xpat(7840)	[446]	132.204	162.648	210.578	203.258	182.013
xpat(7845)	[451]	129.930	105.067	103.680	104.841	101.220
xpat(7850)	[456]	97.437	105.152	96.016	97.727	98.814
xpat(7855)	[461]	98.902	97.576	97.162	95.921	94.631
xpat(7860)	[466]	93.969	94.266	94.601	95.686	95.012
xpat(7865)	[471]	94.488	94.737	97.706	105.095	110.695
xpat(7870)	[476]	106.267	100.990	99.222	100.486	104.348
xpat(7875)	[481]	108.264	113.151	127.182	159.314	216.438
xpat(7880)	[486]	262.247	335.197	439.372	490.166	510.905
xpat(7885)	[491]	488.141	421.918	389.613	425.378	468.198
xpat(7890)	[496]	494.103	520.778	544.516	552.054	560.575
xpat(7895)	[501]	562.179	537.352	519.504	524.653	535.527
xpat(7900)	[506]	531.235	511.808	485.464	465.642	445.230
xpat(7905)	[511]	430.088	451.341	504.959	536.560	502.645
xpat(7910)	[516]	444.063	422.171	425.713	407.952	368.624
xpat(7915)	[521]	333.459	326.067	328.348	314.701	294.310
xpat(7920)	[526]	333.925	344.102	461.960	586.580	632.191
xpat(7925)	[531]	598.532	547.685	525.570	527.875	521.330
xpat(7930)	[536]	483.186	429.585	392.185	374.349	359.259
xpat(7935)	[541]	342.745	336.725	331.788	336.763	372.224
xpat(7940)	[546]	409.647	420.601	412.210	398.474	377.444
xpat(7945)	[551]	349.816	335.448	341.167	351.775	355.529
xpat(7950)	[556]	352.304	349.222	351.710	353.225	353.265
xpat(7955)	[561]	362.118	382.943	427.520	460.050	449.734
xpat(7960)	[566]	421.573	383.791	334.881	303.539	289.710
xpat(7965)	[571]	272.357	253.870	238.959	226.857	222.274
xpat(7970)	[576]	225.861	233.770	243.482	243.576	234.117
xpat(7975)	[581]	228.656	225.605	212.973	197.855	200.883
xpat(7980)	[586]	220.378	242.606	290.827	315.696	332.622
xpat(7985)	[591]	338.518	337.297	330.134	329.434	336.907
xpat(7990)	[596]	337.935	334.746	335.540	32767.000	32767.000
xpat(7995)	[601]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(8000)	[606]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(8005)	[611]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(8010)	[616]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(8015)	[621]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(8020)	[626]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(8025)	[631]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(8030)	[636]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(8035)	[641]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(8040)	[646]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(8045)	[651]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(8050)	[656]	32767.000	32767.000	32767.000	32767.000	32767.000
ES8-33: CERES LW flux at TOA						
xpat(8055)	[1]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(8060)	[6]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(8065)	[11]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(8070)	[16]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(8075)	[21]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(8080)	[26]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(8085)	[31]	32767.000	32767.000	32767.000	32767.000	32767.000

xpat(9295) [581]	9.000	9.000	9.000	9.000	9.000
xpat(9300) [586]	9.000	9.000	12.000	12.000	12.000
xpat(9305) [591]	12.000	12.000	12.000	12.000	12.000
xpat(9310) [596]	12.000	12.000	12.000	12.000	12.000
xpat(9315) [601]	12.000	12.000	12.000	12.000	12.000
xpat(9320) [606]	12.000	12.000	12.000	12.000	32767.000
xpat(9325) [611]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(9330) [616]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(9335) [621]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(9340) [626]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(9345) [631]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(9350) [636]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(9355) [641]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(9360) [646]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(9365) [651]	32767.000	32767.000	32767.000	32767.000	32767.000
xpat(9370) [656]	32767.000	32767.000	32767.000	32767.000	32767.000

ES8-35: Total channel flag words

xpat(25) [1]	2.000	2.000	2.000	2.000	2.000
xpat(30) [6]	2.000	2.000	2.000	2.000	2.000
xpat(35) [11]	2.000	2.000	2.000	2.000	2.000
xpat(40) [16]	2.000	2.000	2.000	2.000	2.000
xpat(45) [21]	2.000	2.000	2.000	2.000	2.000

ES8-36: SW channel flag words

xpat(47) [1]	0.000	0.000	0.000	0.000	0.000
xpat(52) [6]	0.000	0.000	0.000	0.000	0.000
xpat(57) [11]	0.000	0.000	0.000	0.000	0.000
xpat(62) [16]	0.000	0.000	0.000	0.000	0.000
xpat(67) [21]	0.000	0.000	0.000	0.000	0.000

ES8-37: WN channel flag words

xpat(69) [1]	0.000	0.000	0.000	0.000	0.000
xpat(74) [6]	0.000	0.000	0.000	0.000	0.000
xpat(79) [11]	0.000	0.000	0.000	0.000	0.000
xpat(84) [16]	0.000	0.000	0.000	0.000	0.000
xpat(89) [21]	0.000	0.000	0.000	0.000	0.000

ES8-38: Scanner FOV flag words

xpat(91) [1]	2.000	0.000	0.000	0.000	0.000
xpat(96) [6]	0.000	0.000	0.000	0.000	2.000
xpat(101) [11]	2.000	2.000	0.000	0.000	0.000
xpat(106) [16]	0.000	0.000	0.000	0.000	0.000
xpat(111) [21]	2.000	2.000	0.000	0.000	0.000

ES8-39: Rapid retrace flag words

xpat(113) [1]	0.000	0.000	0.000	0.000	0.000
xpat(118) [6]	0.000	0.000	0.000	0.000	0.000
xpat(123) [11]	0.000	0.000	0.000	0.000	0.000
xpat(128) [16]	0.000	0.000	0.000	0.000	0.000
xpat(133) [21]	0.000	0.000	0.000	0.000	0.000

ES8-40: Scanner operations flag word

xpat(22)	512.000	0.000	0.000		
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5.0 Data Organization

[Product Specific Information]

5.1 Data Granularity

[Product Specific Information]

5.2 Data Format

[Product Specific Information]

6.0 Theory of Measurements and Data Manipulations

6.1 Theory of Measurements

See CERES ATBD *Subsystem Number*. ([Reference 3](#))

6.2 Data Processing Sequence

[Product Specific Information]

For detailed information see the Subsystem Architectural Design Document. ([Reference 4](#))

6.3 Special Corrections/Adjustments

Algorithms not discussed in the ATBD are discussed in this section.

7.0 Errors

See CERES ATBD *Subsystem Number*. ([Reference 3](#))

7.1 Quality Assessment

Quality Assessment (QA) activities are performed at the Science Computing Facility (SCF) by the Data Management Team. Processing reports containing statistics and processing results are examined for anomalies. If the reports show anomalies, data visualization tools are used to examine those products in greater detail to begin the anomaly investigation. (See the QA flag description for this product.) *{pointer to QA flag description if any contained in product.*

7.2 Data Validation by Source

See Subsystem *Subsystem Number* Validation Document. ([Reference 5](#))

8.0 Notes

9.0 Application of the Data Set

[Product Specific Information]

10.0 Future Modifications and Plans

11.0 Software Description

There is a [Fortran or C] read program available at the DAAC. The program was designed to run on an Unix workstation and can be compiled with a [Fortran77, Fortran90, or C] compiler.

[Correct for fortran or C] {Pointer to DAAC read program}

12.0 Data Access

12.1 Contacts for Data Center/Data Access Information

EOSDIS Langley DAAC
NASA Langley Research Center
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12.2 Data Center Identification

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12.3 Procedures for Obtaining Data

{Section supplied by the DAAC}

13.0 Output Products and Availability

{Section supplied by the DAAC - includes packaging for distribution}

14.0 References

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15.0 Glossary of Terms

16.0 List of Acronyms

ADM	Angular Distribution Model
APD	Aerosol Profile Data
ATBD	Algorithm Theoretical Basis Document
AVG	Monthly Regional Radiative Fluxes and Clouds
AVHRR	Advanced Very High Resolution Radiometer
BDS	Bidirectional Scan
CADM	CERES Angular Distribution Model
CERES	Clouds and the Earth's Radiant Energy System
CID	Cloud Imager Data
CRH	Clear Reflectance History
CRS	Clouds and Radiative Swath
DAAC	Distributed Active Archive Center
DAO	Data Assimilation Office
DMS	Data Management System
EDDB	ERBE-Like Daily Database Product
EOS	Earth Observing System
EOS-AM	EOS Morning Crossing (Ascending) Mission
EOS-PM	EOS Afternoon Crossing (Descending) Mission
EOSDIS	Earth Observing System Data and Information System

ERBE	Earth Radiation Budget Experiment
ERBS	Earth Radiation Budget Satellite
FOV	Field-of-View
FSW	Monthly Single Satellite Fluxes and Clouds
GAP	Gridded Analysis Product
GB	Giga Byte
GEO	Geostationary Narrowband Radiances
GGEO	Gridded GEO Narrowband Radiances
GMS	Geostationary Meteorological Satellite
GOES	Geostationary Operational Environmental Satellite
H	High
HDF	Hierarchical Data Format
IES	Instrument Earth Scans
IGBP	International Geosphere Biosphere Programme
IMS	Information Management System
INSTR	Instrument
ISCCP	International Satellite Cloud Climatology Project
IWC	Ice Water Content
LaRC	Langley Research Center
L	Low
LM	Lower Middle
LW	Longwave
LWC	Liquid Water Content
MB	Mega Byte
METEOSAT	Meteorological Satellite
MISR	Multi-angle Imaging SpectroRadiometer
MOA	Meteorological, Ozone, and Aerosols
MODIS	Moderate Resolution Imaging Spectrometer
MWH	Microwave Humidity
NASA	National Aeronautics and Space Administration
NOAA	National Oceanic and Atmospheric Administration
OPD	Ozone Profile Data
PSF	Point Spread Function
QA	Quality Assessment
RAPS	Rotating Azimuth Plane Scan
SARB	Surface and Atmospheric Radiation Budget
SBUV-2	Solar Backscatter Ultraviolet/Version 2
SFC	Monthly Gridded Single Satellite TOA and Surface Fluxes and Clouds
SRB	Surface Radiation Budget
SRBAVG	Monthly Averages for Top-of-Atmosphere and Surface Radiation Budget
SSF	Single Satellite CERES Footprint TOA and Surface Fluxes, Clouds
SSM/I	Special Sensor Microwave/Imager
SURFMAP	Surface Map
SW	Shortwave
SYN	Synoptic Radiative Fluxes and Clouds
TBD	To be determined

TISA	Time Interpolation and Spatial Averaging
TMI	TRMM Microwave Imager
TOA	Top-of-the-Atmosphere
TRMM	Tropical Rainfall Measuring Mission
UM	Upper Middle
URL	Uniform Resource Locator
VIRS	Visible Infrared Scanner
WN	Window
ZAVG	Monthly Zonal and Global Radiative Fluxes and Clouds

Unit Definitions

Units	Definition
AU	Astronomical Unit
cm	centimeter
count	count, counts
day	day, Julian date
deg	degree
deg sec ⁻¹	degrees per second
du	Dobson units
fraction	fraction 0..1
g kg ⁻¹	gram per kilogram
g m ⁻²	gram per square meter
hhmmss	hour, minute, second
hour	hour
hPa	hectoPascals
in-oz	inch-ounce
K	Kelvin
km	kilometer, kilometers
km sec ⁻¹	kilometers per second
m	meter
mA	milliamp, milliamps
micron	micrometer, micron
msec	millisecond
mW cm ⁻² sr ⁻¹ μm ⁻¹	milliWatts per square centimeter per steradian per micron
m sec ⁻¹	meter per second
N/A	not applicable, none, unitless, dimensionless
percent	percent, percentage 0..100

Units	Definition
rad	radian
sec	second
volt	volt, volts
W h m ⁻²	Watt hour per square meter
W ² m ⁴	square Watt per meter to the 4th
W m ⁻²	Watt per square meter
W m ⁻² sr ⁻¹	Watt per square meter per steradian
W m ⁻² sr ⁻¹ μm ⁻¹	Watt per square meter per steradian per micron
°C	degrees centigrade
μm	micrometer, micron

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